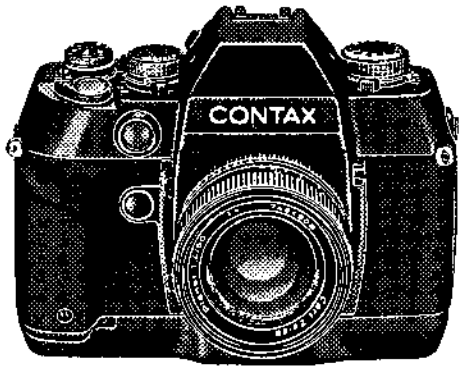
KYOCERA

No.	419-01-50-RA1AF01

CONTAX AX

Repair Manual



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Optical Equipment Group
Service Dept. IAF 961030

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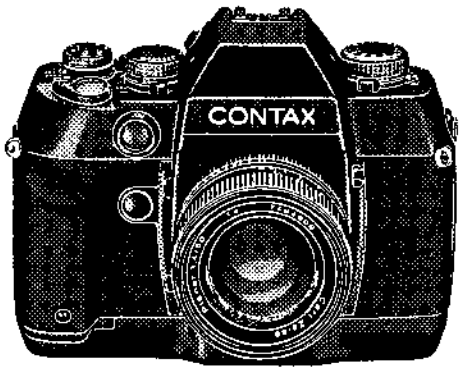

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A. GENERAL & TECHNICAL INFORMATION

FEATURES

The CONTAX AX, employing the newly developed Automatic Back Focusing (ABF) System, realizes the coexistence of manual focus by the lens and auto focus by the camera body and allows use of the conventional Carl Zeiss T* Lenses without degrading the performance of the lenses. The auto focus system named the ABF System, which is quite different from the conventional lens driving AF system, achieves focus by moving the film plane forward and back.

[AF]
- Auto focus system camera containing a body that moves to move the film plane.
- TTL Phase Difference Detector employed.

[AE]
- Various exposure modes (Aperture Priority AE, Shutter Priority AE, Programmed AE and Manual Exposure) available to cope with a wide range of photographic conditions.
- Two light metering systems incorporated, namely, the center-weighted average light metering system, which displays excellent performance at continuous shooting, and the spot metering system, which determines the exposure precisely.
  The spot metering zone corresponds to the about ϕ 5 mm diameter area in the center of the viewfinder.

[Viewfinder]
- A newly developed large pentaprism employed to ensure an adequate field of view and viewfinder brightness so that the ABF System can perform at its maximum efficiency.
- Built-in diopter adjuster permits diopter adjustments in a range from −2.0D to +0.5D.

[Drive Mode]
- Drive modes for single-frame exposure / continuous shooting (Hi, Lo), self-timer (2 seconds, 10 seconds) and multiple exposure available.
- Built-in motor drive permits high-speed continuous shooting at a maximum rate of five shots per second.

[Shutter]
- High-precision shutter operates at high speeds up to 1/6000 second.
- Synchronization with flash at a maximum speed of about 1/200 second possible, allowing effective daylight synchro shooting.

[Custom Function]
- Custom function permits the photographer to select desired functions.
  ① Selection of Exposure Check Button function ② Selection of multi-exposure system
  ③ Selection of A.B.C. exposure order ④ Selection of depth-of-field preview operation
  ⑤ Selection of leaving the film leader outside the film cartridge after rewinding
  ⑥ Selection of film rewinding mode ⑦ Selection of turning on of AF-assist beam
  ⑧ Selection of turning on or off of electronic sound when focusing is completed

[External Appearance]
- Metallic body covers (titanium top cover and hard aluminum bottom cover) with emphasis placed on durability and reliability employed.

[Camera Body]
- Highly rigid chassis constructed of dic-cast aluminum alloy featuring durability and light weight.

[TLA Flash System]
- Any of the TLA series flash units of the CONTAX SLR flash system can be used as an auto flash controlled by TTL direct flash metering.
- The TLA280, TLA360 and TLA480 flash units can be used with second curtain synchronization.

[Data Back] (Optional)
- The Data Back D-8, a multi-functional data back, dedicated to use with the CONTAX AX allows recording of not only date but also photographic data consisting of exposure comparison value / shutter speed / aperture value / exposure mode or two alphabetical characters, or counter value/any desired fixed number between the film frames.
- Photographic data of all the frames can be imprinted onto the first frame and/or second frame of the roll.
- Interval shooting function allows fixed point shooting and unmanned shooting.

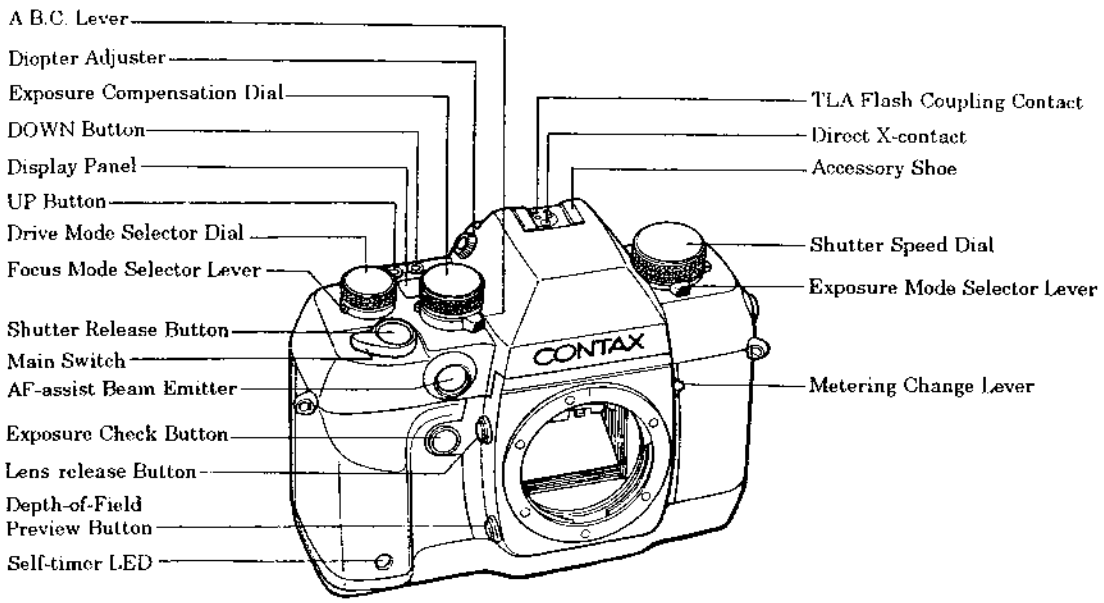
CONTAX AX Specifications

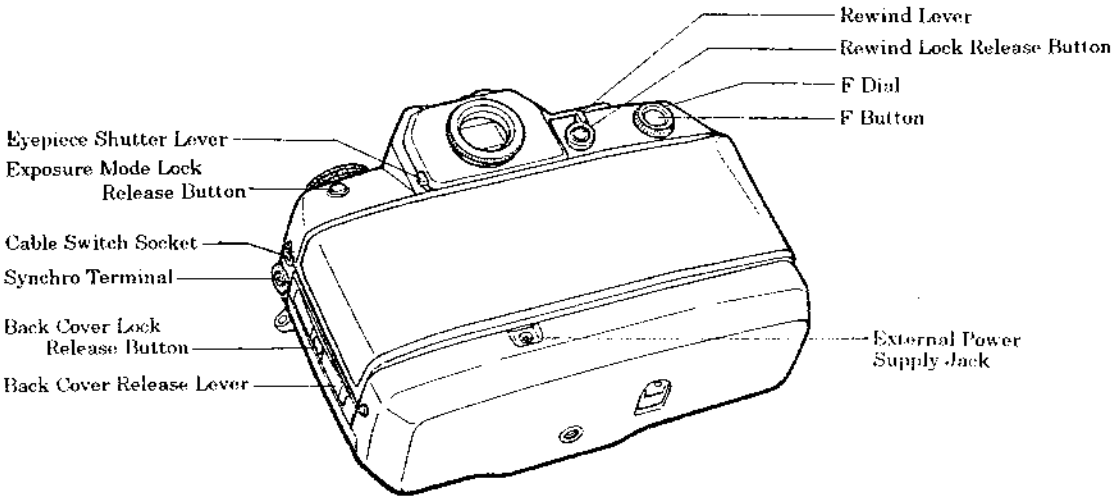
Type	: 35mm focal plane shutter, autofocus SLR camera
Film size	: 24×36mm
Lens mount	: CONTAX / YASHICA MM Mount
Shutter	: Electronically controlled, vertical travel focal plane type
Shutter speeds	: (AUTO) (AV&P) 32 secs. to 1/6000 sec. (TV setting) 4 secs. to 1/4000 sec. (MANUAL) B, X (1/200 sec.), 4 secs. to 1/4000 sec.
Synchro contacts	: Direct X setting (synchronizing speeds 1/200 sec or slower), provided with synchro terminal
Self-timer	: Electronic type with either approx. 10 or 2 sec. delay
Shutter release	: Electromagnetic release with exclusive cable switch socket
Focusing system	: SAF(single autofocus), CAF(continuous autofocus), M(manual focus) and MACRO.
Autofocus	: TTL phase difference detection, Automatic Back Focusing System, Focus sensing range (ISO 100): EV 2~21
Exposure modes	: 1. Aperture-Priority AE(Av) 2. Shutter-speed-Priority AE(Tv) 3. Program AE (P) 4. Manual Exposure(M) 5. TTL Auto Flash 6. Manual Flash
Metering system	: TTL center-weighted average metering or spot metering
Metering range (ISO 100, f/1.4)	: EV 0~21 in center-weighted average metering; EV 3~21 in spot metering
Film speed setting	: Automatic with DX-coded film of ISO 25~5000. Manual setting ISO 6~6400
AE lock	: By exposure value on the image plane in memory
Exposure compensation	: +2EV to−2EV(in 1/3EV steps)
Automatic bracketing control	: A.B.C.lever, 3-frame continuous exposure control. Choose between ±0.5EV or ±1EV.
Coupled flash system	: TTL direct flash control
Flash coupling	: The shutter speed is automatically set to X sync when the TLA flash is charged.
Auto-set flash system	: Possible with Contax flash having an automatic switch-on system.
Second curtain sync	: Possible with Contax flashes having second curtain synchronization capability
Viewfinder	: Eye-level pentaprism finder (long eye-point) with 95% field of view, 0.7X magnification (with 50mm standard lens at infinity and −1D diop. eyepiece)
Dioptric adjustment	: Internally adjustable from +0.5D to −2.0D
Focusing screen	: Horizontal split-image / Microprism (FW-1) standard. Focusing screens are interchangeable.
Display in viewfinder	: Focusing indicator , Shutter speed, Exposure warning, Aperture, A.B.C. display, Exposure compensation, Metering indicator, Back Focusing Scale indicator, exposure counter / Self-timer remaining time, Flash ready
Display panel	: Exposure counter / film speed / self-timer remaining time/ elapsed time on bulb exposure, multiple exposure indicator, custom function display, battery warning signal, Film length indicator, film mark
Film loading	: Automatic loading, automatic film advance to frame No.1 when the shutter release button is pressed
Film advance	: Automatic film advance with built-in motor.
Film rewinding	: Automatic film rewind with built-in motor, automatic stop after rewinding is completed, mid-roll rewinding possible.

Film rewinding	: Automatic film rewind with built-in motor, automatic stop after rewinding is completed, mid-roll rewinding possible.
Drive mode	: Single-frame, continuous CL(approx.3 frames per second) or CH(approx.5 frames per second), approx.2 or 10 sec. self-timer, multiple exposure
Film advance speed	: Approx. max.5 frames per second on continuous CH mode (with fresh battery in normal temperatures, as tested according to our testing standard.)
Film counter	: Automatic resetting,
Accessary shoe	: Direct X-contact (coupled with TLA flash)
Custom function	: ● Selection of AE-lock ●Multi-exposure selection ●A.B.C. exposure order selection ●Depth-of-field preview operation ● Rewind with tab remaining out or wound in ●Film rewinding mode selection ●Turning on of AF supplementary light ●Electronic sound when focusing is completed.
Camera back cover	: Opened by the camera back opening lever. Detachable.
Power source	: 1 pc. 6V lithium battery (2CR5)
Battery check	: Automatic check; battery warning indicator in display panel.
Battery capacity	: About 50 rolls of 36-exposure film (with a new lithium battery, in normal temperatures, as tested according to our testing standard)
Others	: Depth-of-field preview button, socket for external power source.
Dimensions	: 162(W)×123.5(H)×72(D) mm (6-3/8×4-7/8×2-7/8 inches)
Weight	: 1,080grams (38.1 oz) (without battery)

*Design and specifications are subject to change without notice in advance.

NAMES OF PARTS





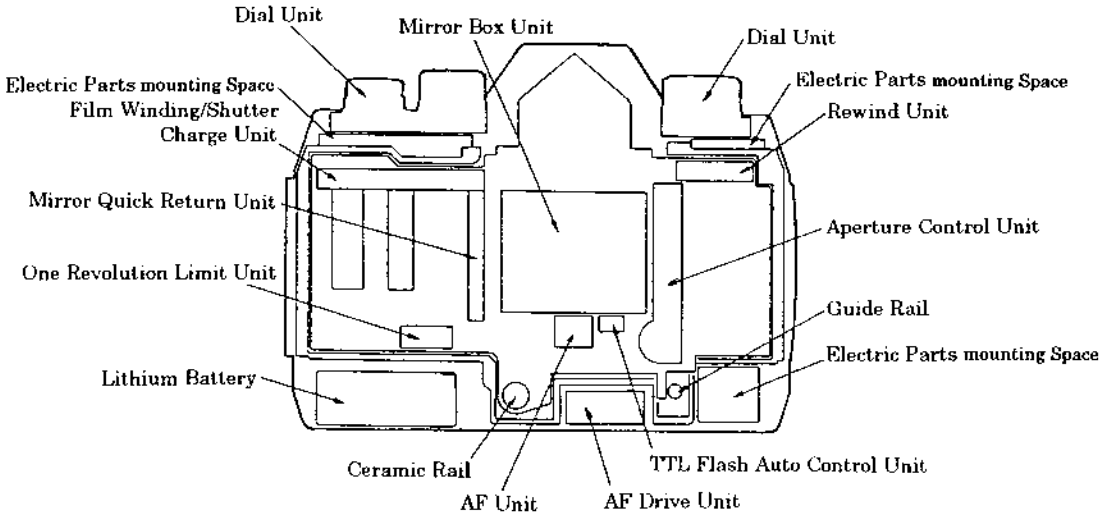
DESCRIPTION OF MECHANISMS

[Internal Structure]

This camera consists of a movable body and a fixed body. The movable body contains the Mirror Box Unit, Viewfinder, Film Transport Mechanism, AF Unit and Shutter Unit. The fixed body contains the AF Drive Unit, Top and Bottom Covers, operation buttons/levers, Mount Base Unit and Back Cover Unit.

The "body moving within a body" construction is composed of the movable inner body, incorporating the film plane, mirrors, AF module, pentaprism and other parts of the viewfinder optical system, and the fixed outer body.

One driving ceramic rail supports the movable body and the fixed body and another guide rail prevents the rotating play between the two bodies. The highly precise, smooth moving of the inner body is ensured by the high-strength and high-precision ceramic rail featuring excellent wear resistance and almost no change with time in durability. The movable body is driven by an ultrasonic motor that displays excellent control characteristics at low revolving speeds and high torque.



(Layout of Units)

[Principal Mechanisms]

(1) Body Drive

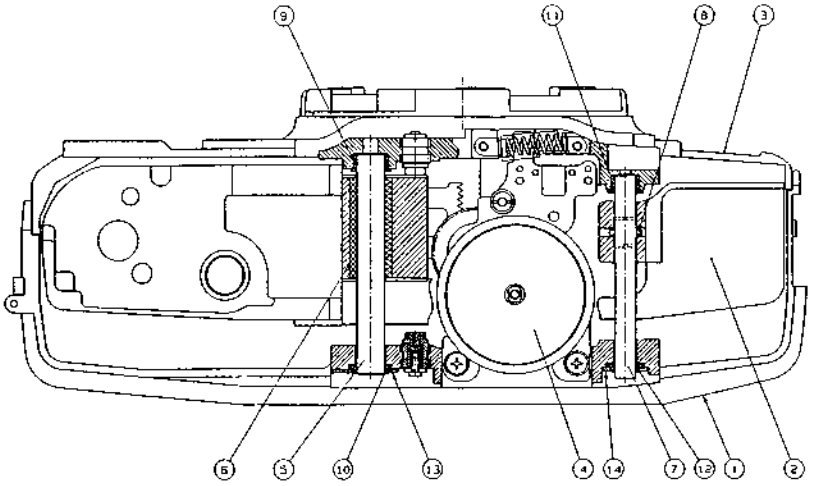
The fundamental structure is constituted of the slide mechanism in which two rails to move the movable body are provided at the bottom center of the camera body. Themovable body is moved in such a way that the film plane on it moves correctly in parallel with the lens mount surface on the fixed body. This slide mechanism consists of a ceramic rail, the main bar, located below the center of gravity of the movable body and a steel rod, the rotation preventing bar, located in parallel with the rail. Both ends of each bar are supported by the fixed body. The movable body is provided with two holders for each of the two bars.

For the ceramic rail, a ceramic collar is secured to the movable body so that it fits on the ceramic rail. For the other steel rod, the movable body has a rotation preventing bar holder which is in contact, along a line in the direction of the axis, with the steel rod by the force applied in the direction of turning the movable body around the main bar. At one end of each bar supported by the fixed body, an adjuster is provided to adjust the parallelism with the optical axis to the required accuracy. Thus adjustment can be made so that the movable body will move along the optical axis smoothly.

The movable body is driven by a high-torque ultrasonic motor that features a large retaining torque at low speed run and at stoppage. This motor enables the high-speed and high-accuracy movement of the movable body. The transmission mechanism is provided with backlash eliminating mechanism.

At the bottom of the fixed body, the ultrasonic motor and the reduction gear are assembled on a base plate and the rack on the movable body is engaged with the reduction gear.

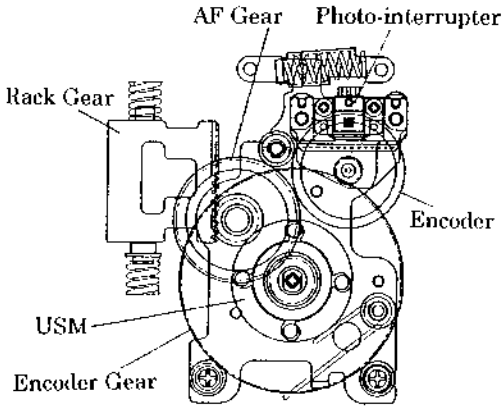
To absorb the impact that can be caused at arrival of the movable body at the wall of the fixed body, a coil spring is mounted at each end of the rack and a fixed stop mechanism that works as a motion limit detecting switch is mounted at each stop position on the fixed body. This stop mechanism reduces the impact caused by the movable body, driven by the ultrasonic motor, at its stop against the fixed body. It also works as an adjuster that adjusts the position of the movable body.
For stop control, the mechanism stop switch detects the end position and the rotary encoder detects the absolute position.

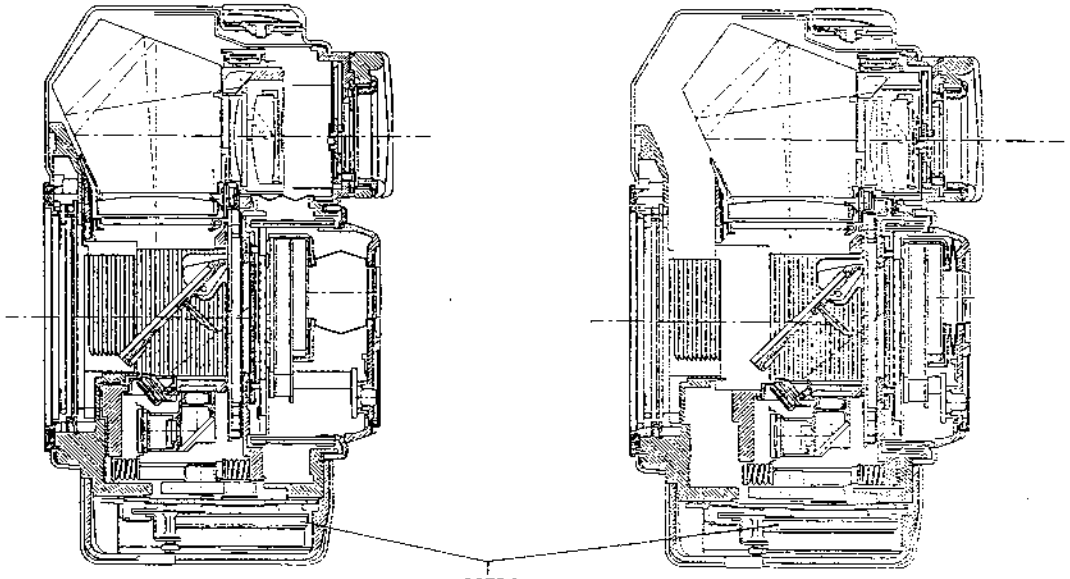


(Body Bottom View)

① Fixed Body
② Movable Body
③ Mount Base
④ Ultrasonic Motor
⑤ Ceramic Rail
⑥ Ceramic Rail Collar
⑦ Rotation Preventing Bar
⑧ Rotation Preventing Bar Holder
⑨ Rail 1 Holder (F)
⑩ Rail 1 Holder (R)
⑪ Rail 2 Holder (F)
⑫ Rail 2 Holder (R)
⑬ Rail 1 Adjust Plate

(2) Ultrasonic Motor (USM)
The Ultrasonic Motor (USM), featuring high torque and low rpm, can drive a distance of 10 mm by 1.5 revolutions. Thanks to the USM and newly developed control system, the camera realizes smooth speed control from low speed to high speed, reduction of impact caused at start and stop of the motor and the most efficient output of response. That is, it performs smooth, high-accuracy and silent Body drive control.





(Movable Body in Standard Position)
(Movable Body in Close Distance Position)

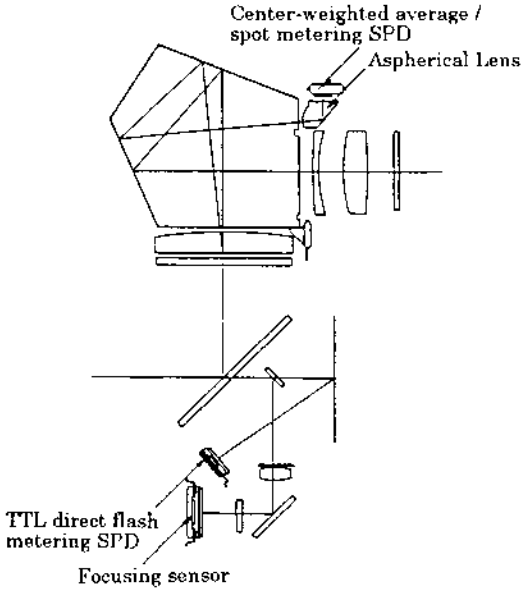
(3) Viewfinder

The standard camera uses a focusing screen of horizontal split-image spot with microprism collar so that easy operation will be ensured. The matte surface is so constructed that the photographer can easily see the sharpest focus.

A large pentaprism is used to assure adequate field of view and brightness even during body moving. Dioptric adjustment ensures that the display in the viewfinder is easily seen.

The viewfinder is so designed as to minimize the distortion and blur of the image in the viewfinder that can be caused by aberration fluctuation due to viewfinder movement. The viewfinder mechanism can also reduce flare so that the photographer can see the image clearly.

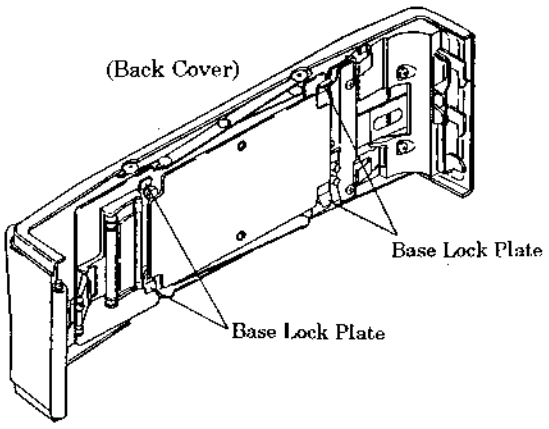
Irrespective of the movement of the viewfinder, 25 mm eye point distance is always ensured by the construction for keeping long eye point distance.



(Light Metering Block Layout)

(4) Back Cover

In this camera employing the ABF System, unlike the conventional cameras, the Pressure Plate comes out together with the Back Cover at its opening. When the Back Cover is closed, the Pressure Plate moves together with the Movable Body while keeping a clearance as the film path between the Pressure Plate and the Movable Body. To realize this configuration, the parts necessary for film transport, such as the Pressure Plate, Cartridge Holder, Spool Roller and Sprocket Roller, are mounted together on one base plate. The base plate can be moved straight toward the Movable Body.



To permit the base plate to move together with the Movable Body, the base plate must be locked to the Movable Body at the closing of the Back Cover and must be released from the Movable Body at the opening of the Back Cover. To meet these conditions, the Movable Body is always kept retracted in a finite position when the Back Cover is open. At the closing of the Back Cover, the four Base Lock Plates of the base plate trip into the upper and lower areas in the Movable Body to lock the base plate to the Movable Body securely. At the opening of the Back Cover, the Base Lock Plates, coupled with the Back Cover Release Lever, are released from the Movable Body.

The Back Cover for Data Back is constructed the same way as above. The Date Module is also incorporated on the base plate and the data imprinting conditions are kept constant.

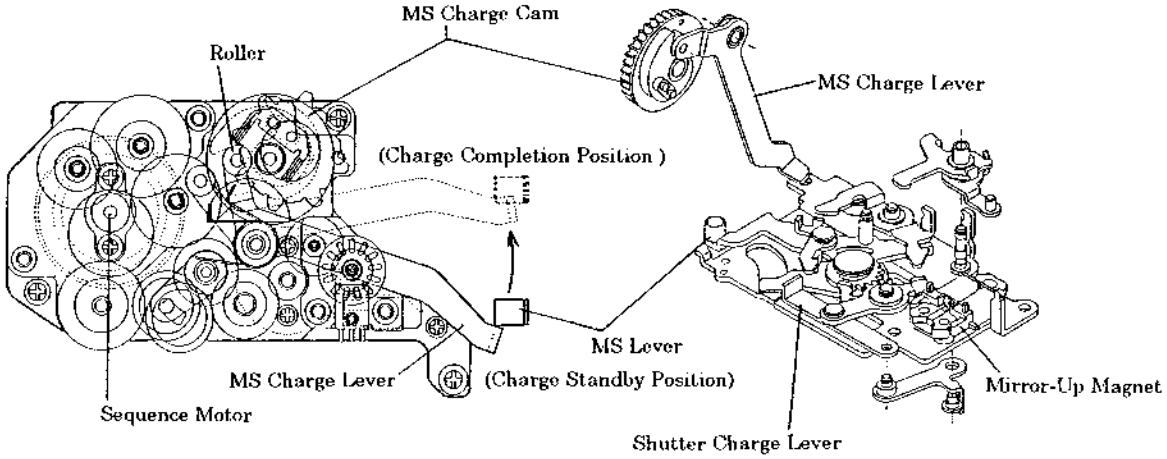
(5) Sequence Control

The camera sequence other than body drive is controlled by three DC micromotors and four plungers. The sequence control, say, for starting the motors at different timings enables film frame feed at a maximum speed of five frames per second with only one 6 V lithium battery.

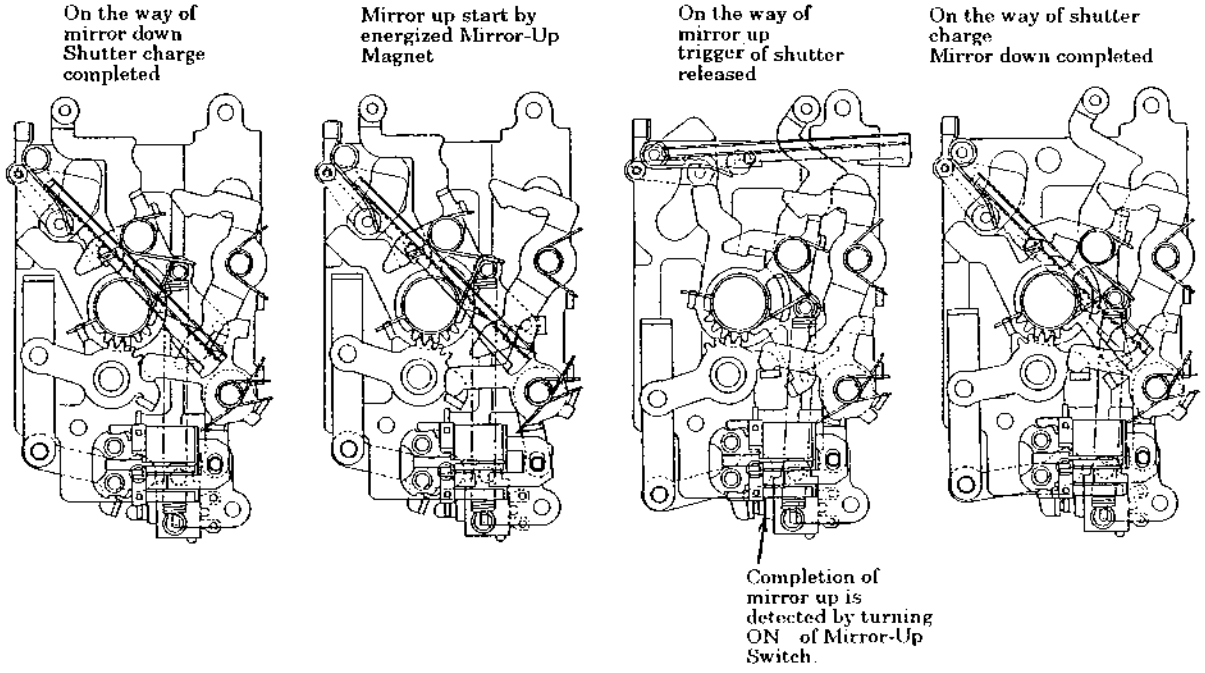
The motor (Sequence Motor) in the spool and the unidirectional rotary cam drive to perform ① charge of Mirror-Up Spring (* mirror up is performed by a spring), ② shutter charge, and ③ charge of Mirror Magnet (* performed at mirror up by spring force).

For control, the pattern on the FPC is read by the contact (MS Charge Contact) mounted on the rotary cam (MS Charge Cam) and a short brake is applied to the motor.

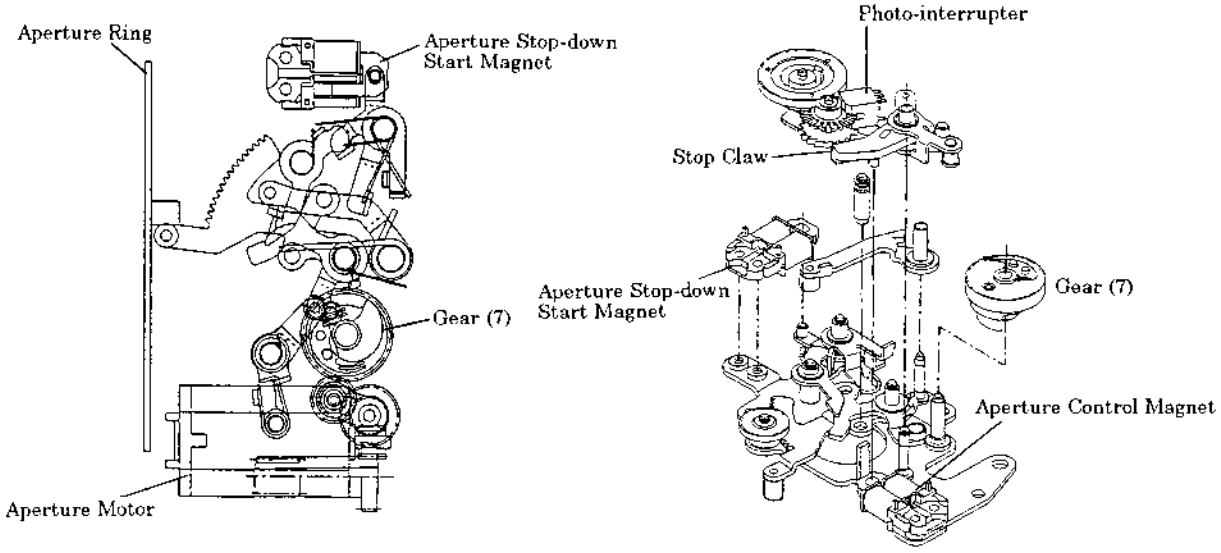
After completion of shutter sequence operation (mirror up and exposure), the signals of shutter charge and the charge of Mirror-Up Spring are input to the Sequence Motor. As the Sequence Motor runs forward, the MS Charge Cam rotates via the reduction gear train. The roller of the MS Charge Lever in contact with the MS Charge Cam is pushed by the MS Charge Cam and thus the MS Charge Lever moves in the direction of the arrow. The MS Charge Lever pushes the MS Lever on the MU Base Plate (quick return mechanism) mounted at the side of the Mirror Box to perform shutter charge, quick return of the Mirror (mirror down) and the charge of the Mirror-Up Spring.
At turning ON of the Shutter Release Switch, the Mirror-Up Magnet is energized. Then the attracted plate of the Mirror-Up Magnet is separated, so that the Mirror is pulled up by the force of the Mirror-Up Spring. At the same time, the lock of the shutter is released and thus the shutter operates.
Coupled with the mirror up and down, Mirror-Up Switch is switched.



(Explanation of Mirror Quick Return Motion)

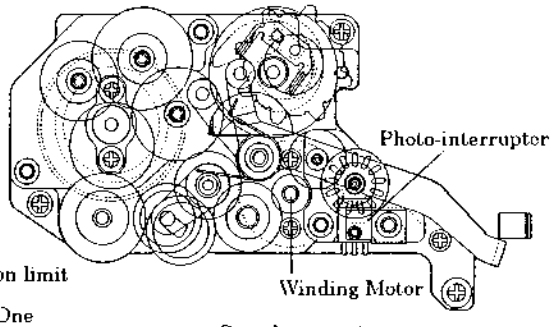

On the way of mirror down Shutter charge completed
Mirror up start by energized Mirror-Up Magnet
On the way of mirror up trigger of shutter released
On the way of shutter charge Mirror down completed
Completion of mirror up is detected by turning ON of Mirror-Up Switch.

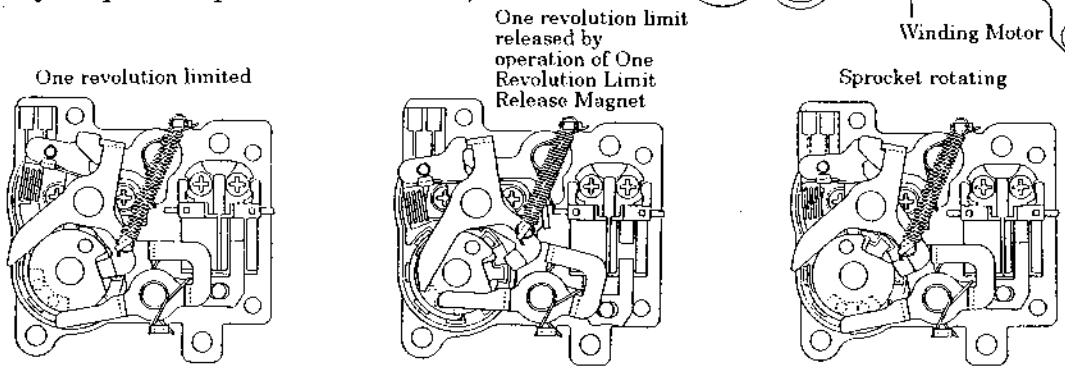
Aperture drive and aperture control are performed by the motor (Aperture Motor) located at the right side of the Mirror Box. For aperture drive, the Aperture Motor and the unidirectional rotary cam drive to perform the charge of the Auto Aperture Lever, charge of the Aperture Stop-down Start Magnet and the charge of the Aperture Magnet. The contact mounted on the rotary cam (cam of Gear (7)) reads the pattern on the FPC and the CPU controls the drive.
To control the aperture, the travel of the Aperture Ring is read by the encoder through a photo-interrupter, the Aperture Magnet is energized at a proper timing and the Stop Claw is made to trip onto the ratchet.

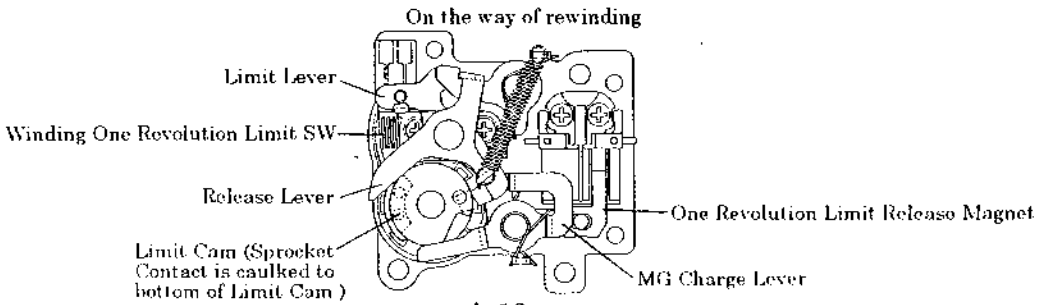


(6) Film Transport

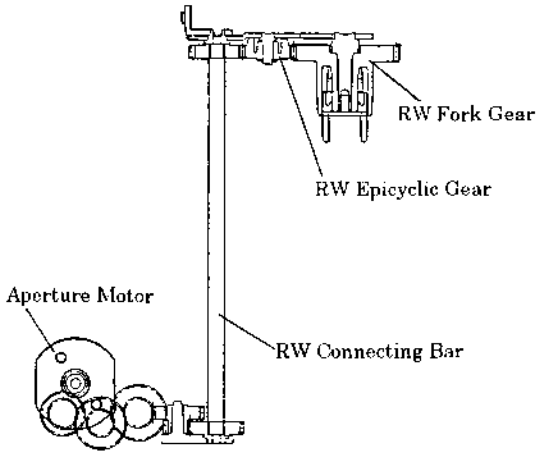
For winding, the dedicated motor drives the spool via the reduction gear and the One Revolution Limit Mechanism controls film travel.
The signal from the encoder coupled with the Winding Motor is input to the dedicated Data Back D-8 for control of compiled data imprinting (at compiled data imprinting, film is wound little by little by the pulse output from the encoder).




One revolution limited
One revolution limit released by operation of One Revolution Limit Release Magnet
Sprocket rotating

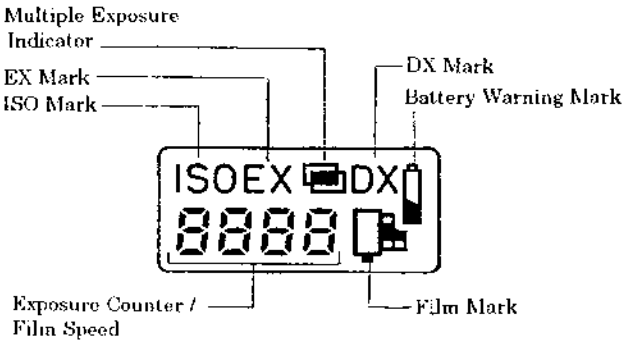

On the way of rewinding
Limit Lever
Winding One Revolution Limit SW
Release Lever
Limit Cam (Sprocket Contact is caulked to bottom of Limit Cam)
One Revolution Limit Release Magnet
MG Charge Lever

For rewinding, when the Rewind Switch is turned ON, the above-mentioned control motor runs backward to drive the rewinding mechanism.
When the motor starts running backward, the epicyclic gear is disengaged to release the spool. The One Revolution Limit Mechanism is automatically released at backward run.
In this camera employing the ABF System, the Rewind Fork is located on the Movable Body and the Drive Mechanism is on the Fixed Body. To start rewinding operation, the Movable Body is extended to the infinity position (MF) and the gear train is engaged via the epicyclic gear.



[Electric Circuit]
As shown in the Electric Circuit Block Diagram on page A-15, the electric circuit consists of three high-speed CPUs and other parts.
CPU1 is located on the Main FPC, which is mounted on the Fixed Body, and CPU2 and CPU3 are located on the Sub FPC, which is mounted on the Movable Body.
CPU1 controls input to operation switches, indications on the Display Panel, flash communication and power supply.
CPU2 controls a series of AF operations from AF Sensor IC control to USM drive, flash control including Light Metering IC control, shutter release sequence including exposure calculation and other fundamental operations of the camera. It also controls backup data.
CPU3 performs Light Metering IC control including temperature detection, mechanism control for, say, film winding, control of display in the viewfinder and Data Back communication.
CPU1 receives and controls external information, CPU2 selects mechanical operation according to such information and CPU3 controls the mechanical operation actually. That is, the electric circuit is so constituted that the camera operations are divided into three flows that are assigned to the three CPUs, respectively.
In addition, communication with an external CPU, such as that of the flash unit, is shared among the three CPUs to balance the processing capacities of the CPUs. As a result, the whole camera control processing is executed at a high speed. Also since power to CPU2 and CPU3 is under control of CPU1, this circuit prevents unnecessary power consumption.
The oscillator circuit used in driving the Movable Body, performing frequency fluctuation control and newly employed voltage control, can control a much wider range of speed and thus it can control AF speed precisely.

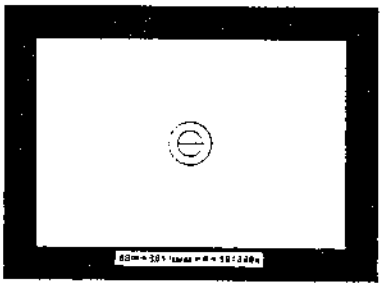
[Display]
(1) External Display
An LCD Panel is employed for external display. The exposure counter is always lighting even when the Main Switch is OFF. (The Film Mark is also displayed when film has been loaded.) This counter can be switched between the display film speed and that of exposure count by operating the UP or DOWN Button.
In each mode of ISO, custom function (CF) or multiple exposure, the corresponding mark lights up and the set value is displayed. During multiple exposure photography, the Multiple Exposure Indicator will blink to give a warning.

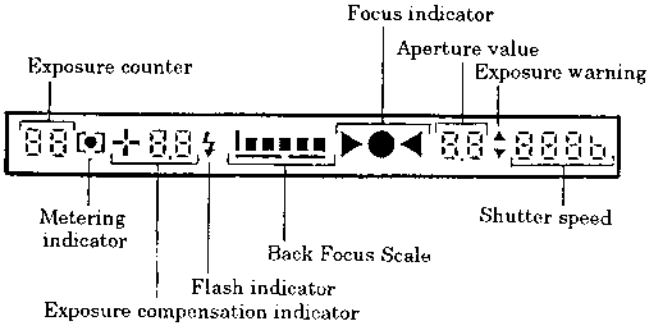


(6) Viewfinder Display

An LCD is employed for the display in the viewfinder. The brightness of the back light LED is changed according to the brightness of the subject so that the display is always easily seen. The display color is yellow-green.

The display includes an exposure counter, metering indicator, exposure compensation indicator, flash indicator, aperture value, exposure warning and shutter speed. It also includes a focusing indicator and Back Focusing Scale indicator that will help the photographer at focusing. At manual focusing, the focusing indicator shows the focusing information, namely, "in-focus", "front focus" or "rear focus". At auto focusing, on the other hand, the focusing indicator shows "in-focus" or "drive end" at the end of focusing drive. The Back Focusing Scale, by regarding the position of 45.5 mm from the mount ring surface as the reference position, shows the film plane position in six steps up to 55.5 mm by indicators. Thus the photographer can know the position of the Movable Body clearly.





[Auto Focusing (AF)]

TTL Phase Difference Detector is employed for AF detection.

(1) AF System

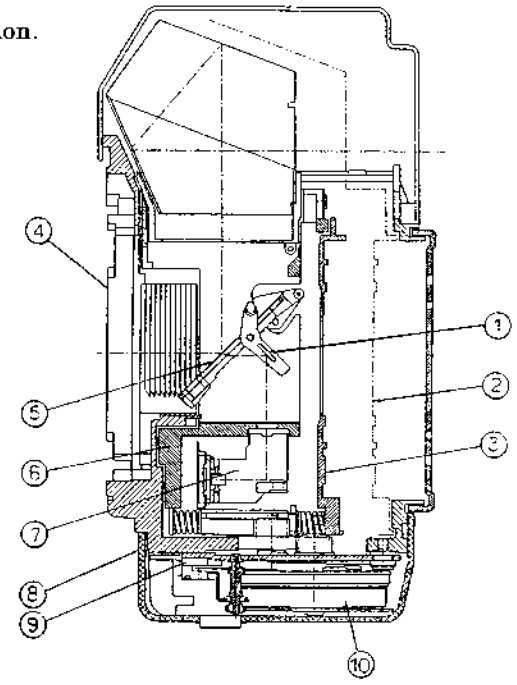
As the AF system, a new system is employed to improve the perform in the following ways:

① An IC incorporating a signal processing circuit is employed as the AF sensor.
② Uneven quantity of light of AF sensor surface is corrected.
③ For each subject, an optimum picture processing algorithm is used.
④ Detection resolution is enhanced by lessening the focus shift per pitch of CCD sensor elements.
⑤ Calculation time is reduced by employing high-speed CPUs.

(2) AF Drive Control

In the conventional AF method by lens driving, it is required to read in the information on the mounted lens and control auto focusing accordingly. The AF method by body driving, however, can control auto focusing consistently without depending on the information on the mounted lens.

Use of the USM as the drive source realizes silent AF driving and high-speed AF response. Moreover, since a high-performance encoder (incorporated in USM Ass'y, see illustration on page A-7) detects the body position, the stop position error of the body can be reduced to 10 μm or less to ensure highly reliable auto focusing.



① Sub Mirror
② Movable Body at close distance position (55.45 mm)
③ Movable Body at reference position (45.45 mm)
④ Mount Ring
⑤ Main Mirror
⑥ Mirror Box
⑦ AF Module
⑧ Cell Case
⑨ Photo-interrupter
⑩ USM

[Exposure Control]

(1) Light Metering and TTL Flash Auto Control

The light metering optical system and SPD are located above the eyepiece and an aspherical lens is used as the condensing lens to minimize light metering deviation.

Light metering mode is switched by the Selector Lever between spot metering and center-weighted average light metering. The spot metering system measures the light exposure of ϕ 5 mm diameter area (value converted to that of film surface) in the center of the screen.

With the Main Switch set in the AE Lock position, each film plane exposure value is locked in whichever mode. Using the custom function, the photographer can make setting so that AE lock will be achieved by depressing the Shutter Release Button halfway.

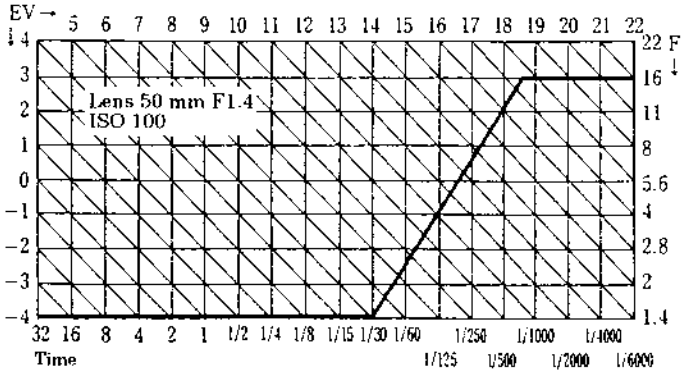
For TTL direct flash control, the SPD located below the Mirror Box reads the light reflected by the film and outputs the flash stop signal to control the flash intensity.

(2) Shutter, Exposure Modes

The camera can be operated in six exposure modes, namely, Aperture Priority AE (Av), Shutter Priority AE (Tv), Programmed AE (P), Manual Exposure (M), Synchro (X) and Bulb (B). Shutter speed can be set to 1/4000 second through 4 seconds by the Dial in Tv or M mode and can be controlled in a range from 1/6000 second to 32 seconds in Av or P mode.

For photography with flash, the camera in combination with a TLA Flash Unit allows TTL direct flash metering. Upon completion of full charge of the TLA Flash, the flash ready indicator appears and the shutter speed is automatically switched to the synchronizing speed (1/200 second). If the AE Lock Switch is pressed in AE mode in this state, slow synchro shooting is allowed and shutter speed is shifted from the synchronizing speed (1/200 second) to a value suited to optimum exposure of the background. However, the shift is limited to 32 seconds.

Exposure compensation can be set in the range of $\pm$2.0 EV in 1/3 EV steps. The compensation value is displayed blinking in the viewfinder. The A.B.C. function (3-frame continuous automatic exposure compensation function) allows selection of $\pm$0.5 EV or $\pm$1.0 EV as the compensation value. As the order of exposures, the custom function allows selection of "standard exposure → overexposure → underexposure" or "overexposure → standard exposure → underexposure".



Lens 50 mm/F1.4, ISO 100

(Light Metering Linkage Chart)

[Multi Functional Data Back]

(1) Compiled Data Imprinting Function

This Data Back has not only the functions of imprinting the date, time and other data between the film frames the same way as the conventional Auto Dating Module but also a newly employed Compiled Data Imprinting Function. This function allows recording compiled photographic information onto one or two frames and thus ensures easy pigeonholing and checking of photographic data. This function also allows printing of data, which is not allowed for the data between the frames. The Compiled Data Imprinting Function imprints the following data in a fixed format:

① Year/Month/Day/Hour of film loading
② Photographic data (compensation value, shutter time, F value and exposure mode)
③ Exposure count (in increments of 5 frames)
④ Year/Month/Day/Hour of film unloading

* Exposure modes available are M, Av, Tv, P and X.
The execution of this Compiled Data Imprinting can be selected when loading film by operating the Compiled Data Imprinting Switch located on the inside of the Back Cover. With the Compiled Data Imprinting Switch turned ON, two frames of the 36-exposure film are reserved for data imprinting and data will be imprinted there. Therefore, actual exposure will be started with the third frame and the exposure counter will start counting from 03. With the Compiled Data Imprinting Switch turned OFF, normal photography will be started with the first frame.

(2) Between-frame Imprinting

As the data to be imprinted between the frames, the photographer can select one out of the following ① to ⑧ and also change the selection on the midway for each "between-frame".

① Year/Month/Day	'96	4M	15 K C
② Month/Day/Year	4M	15	'96 K C
③ Day/Month/Year	15	4M	'96 K C
④ Day/Hour/Minute	15	18	: 24 K C
⑤ Photographic data	+0.3	2000	F2.8 K C
⑥ Counter	Cou	2016	- 16 K C
⑦ Any desired fixed number		1234	56 K C
⑧ No imprint	—	——	— - -

(Data Back Display Panel)

One of ① to ④ is to be selected for the same imprinting as that by the conventional auto dating module.

The content of ⑤ is the same as the photographic data to be imprinted at compiled data imprinting. When the space for alphanumerical characters has been left blank, in mode ⑤, the exposure mode is automatically imprinted instead of alphabetical characters. When the photographer sets desired characters, the set characters will be imprinted. (In the example shown above, desired characters "KC" are set.) The set characters are added to the data imprinted in any one of ① to ⑦ modes. As the characters to be set, the photographer can select any of the alphabetical characters A to Z and numerals 0 to 9.

In counter mode ⑥, the numerical data consists of superior-order four digits and inferior-order two digits. As the superior-order four digits, the photographer can set any desired digits. The inferior-order two digits, coupled with the exposure counter, represents the exposure count that will increase automatically one by one at shutter release. The superior-order four digits can be set in any desired way, say, for sorting by assigning 1000 and larger numbers to some publishing company and 2000 and larger numbers to some newspaper office.

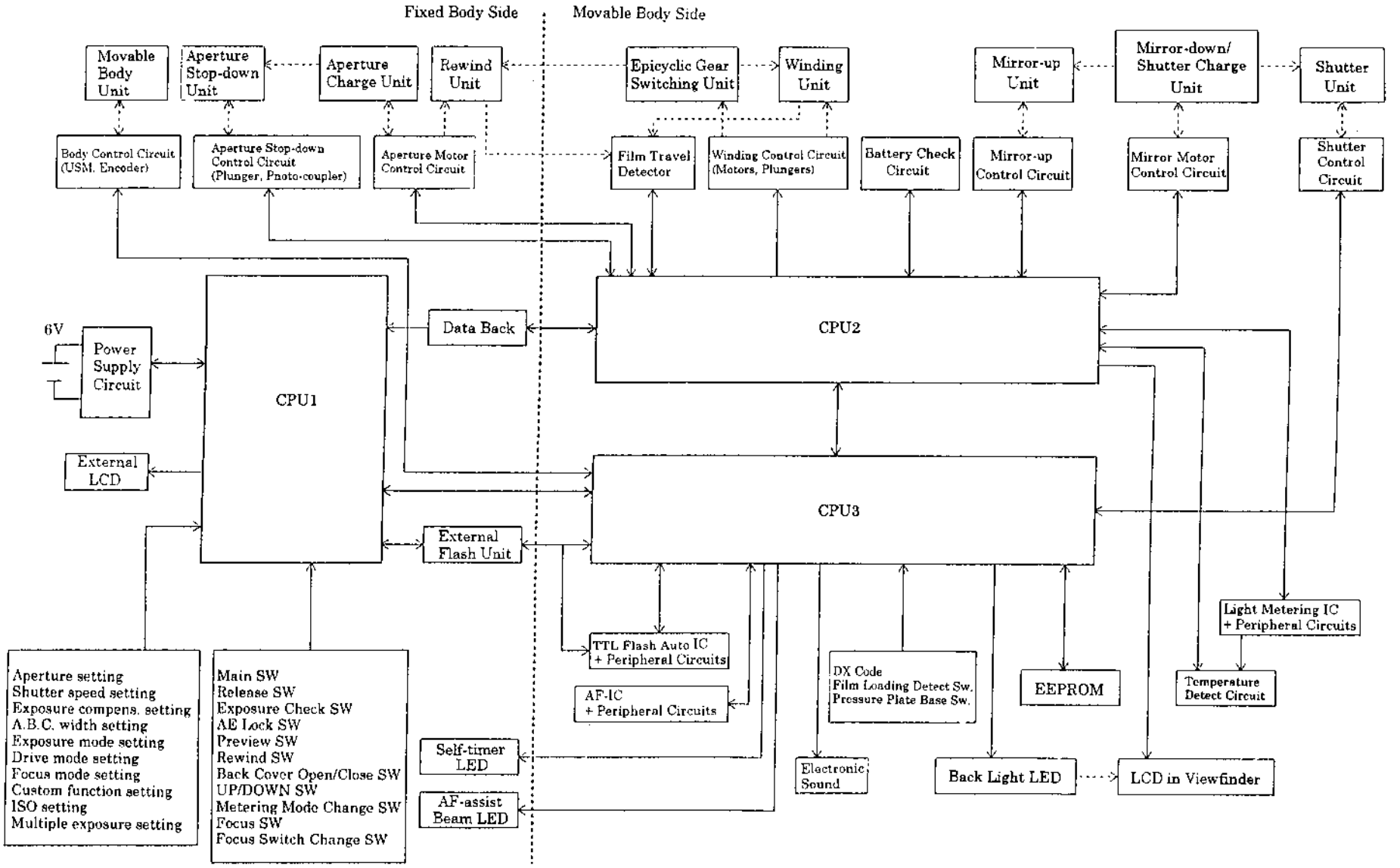
In ⑦, all six digits are imprinted exactly as set by the photographer. ⑧ is to be selected when no imprint is desired.

(3) Interval Shooting Function

This newly developed Data Back, with interval shooting function, allows the following settings:
① Number of shots (up to 99 shots), ② Shooting interval (up to 99 hours and 59 minutes),
③ Day, hour and minute of shooting start (up to one month later)
This function enables easy unmanned photography to expand the chance to take pictures.

ELECTRIC CIRCUIT BLOCK DIAGRAM

No.	419-01-50-RA1AF01



DESCRIPTION OF ELECTRIC CIRCUIT

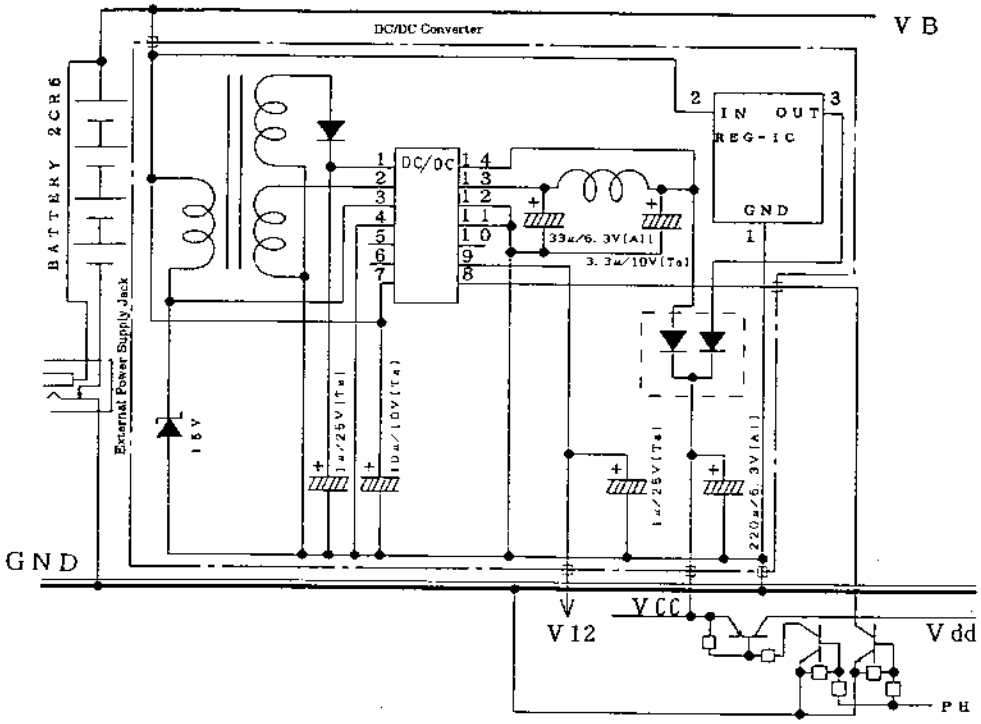
1. Power Supply Circuit

[Outline]

The camera operates by the following four power supplies:

① V_B : Power to mechanism drive
② V_{CC} : Power to CPU1 (power supply Control)
③ Vdd : Power to CPU2, CPU3 and electric circuit drive
④ V_{12} : Power to AF-IC CCD

(Power Supply Circuit Diagram)



[Circuit Function]

When the PH turns ON (Hi), the DC/DC Converter IC supplies power of 5 V to V_{CC} and 12 V to V_{12}. At the same time, power of about 5 V is supplied to Vdd.
In this state, power supply to V_{CC} and Vdd is ensured until V_B drops to about 3.0 V.
When the PH turns OFF (Lo), the DC/DC Converter is stopped and power to V_{CC} is supplied from the Regulator IC. In this state, operation is allowed until the voltage drops to the reset voltage (V_{CC} = about 2.7 V). Power supply to Vdd and V12 is stopped.

[Output Voltage]

	When Power is ON (Typical value)	When Power is OFF	
		VB≧5.5V	3.0≧VB>5.5V
Vcc	4.7V ~ 4.8V	4.6V ~ 4.9V	2.7V ~ 4.9V
Vdd	4.55V ~ 4.7V	0V	
V12	12.0V	0V	

2. Battery Check Circuit

[Battery Check Timing]

① Initial battery check
- At reset start
- Power OFF → ON

② Mechanical operation battery check
- At motor start for each mechanical operation
  Blank shots advance
  AF
  Shutter sequence
  Rewinding
  Preview operation

③ Periodical check during use of Bulb

[Voltage Application for Loaded Voltage Check]

Perform loaded voltage check by applying voltage in the direction of the forward run of the Winding Motor.

[Indications of Battery Warning Mark]

Check the voltage in the order of open voltage check and loaded voltage check. In each of no-load voltage check and loaded voltage check, make the indication change by the voltage data A/D converted four times.

Battery Warning Mark	V_B
Off (normal operation)	3.8 V or higher
Lighting (warning)	3.6 V to 3.8 V
Blinking (operation prohibited)	3.6 V or lower

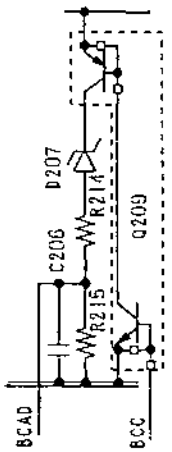
[Circuit Constitution]

The Battery Check Circuit consists of R214, R215, D207, C206 and Q209.

[Circuit Function]

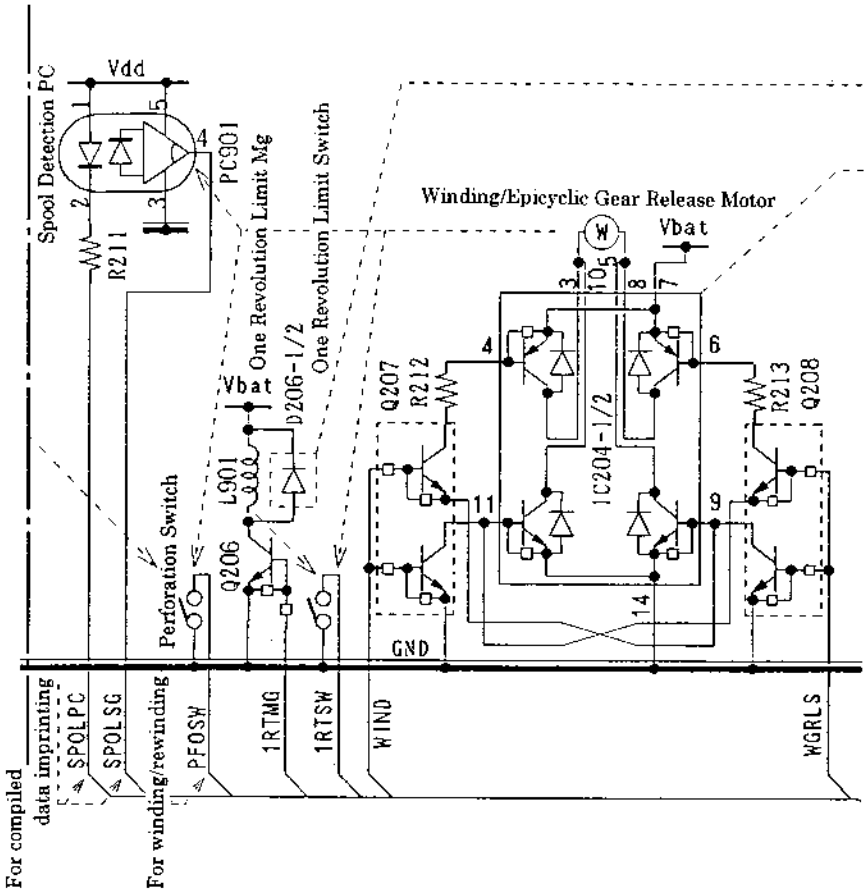
V_B (battery voltage) divided by R214 and R215 is input to the BCAD terminal of CPU3, where the voltage is checked. This voltage is stabilized by C206. The voltage check is performed at turning power ON, driving a motor and periodically during photography with Bulb. At each check, The BCC terminal of CPU is turned ON.
D207 is used to improve the resolution.

(Battery Check Circuit Diagram)



3. Winding and Epicyclic Gear Release Drive Circuit

(Winding and Epicyclic Gear Release Drive Circuit Diagram)



3-1. Winding and Epicyclic Gear Release

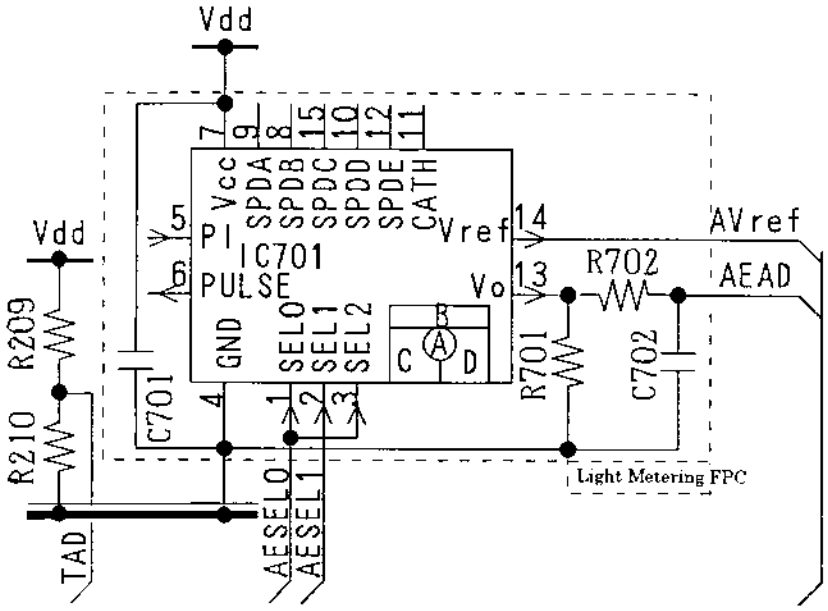
This circuit consists of the Winding Motor, the motor driver IC 204, the transistors Q207 and Q208 for predriving and protection, resistors R212 and R213 for base current limiting, photo-interrupter PC901 and the resistor R211 for LED current limiting.
The motor is controlled as shown at right by the motor forward run signal (WIND) and motor reverse run signal (WGRLS) from CPU3.
Also when CPU3 turns the winding LED control signal (SPOLPG) "Lo", Spool Pulses (SPOLSG) are output. CPU3 counts these pulses to detect the travel of the wound film for compiled data imprinting.
On the other hand, CPU3 counts the Perforation Switch (PFOSW) to detect the travel of wound film at normal photography.

WIND	WGRLS	Operation
Lo	Lo	Free
Hi	Lo	Winding
Lo	Hi	Epicyclic Gear release
Hi	Hi	Brake

※ Epicyclic Gear release is performed when the gear engagement is switched from the winding direction to the rewinding direction.

4. Light Metering Circuit and Temperature Detection Circuit

(Light Metering Circuit and Temperature Detection Circuit Diagram)



4-1. Light Metering

The circuit consists of the light metering IC (IC 701) incorporating an SPD, the resistor R701 for output buffer compensation, resistor R702 for noise elimination, the power supply bypass capacitor C701 and the capacitor C702 for noise elimination.
A light metering area is selected by the divided light metering selection signals (AESEL0 and AESEL1) set in CPU3 as shown table at right. The light metering output (AEAD) is taken in by CPU3.

Light Metering Mode	AESEL0	AESEL1
Center-weighted average light metering	Hi	Hi
Spot metering	Lo	Hi

The analog reference voltage AVREF is output from the Light Metering IC. (Typical voltage: 2.88 V under the conditions of 25±1.5℃ and Vdd=5V)

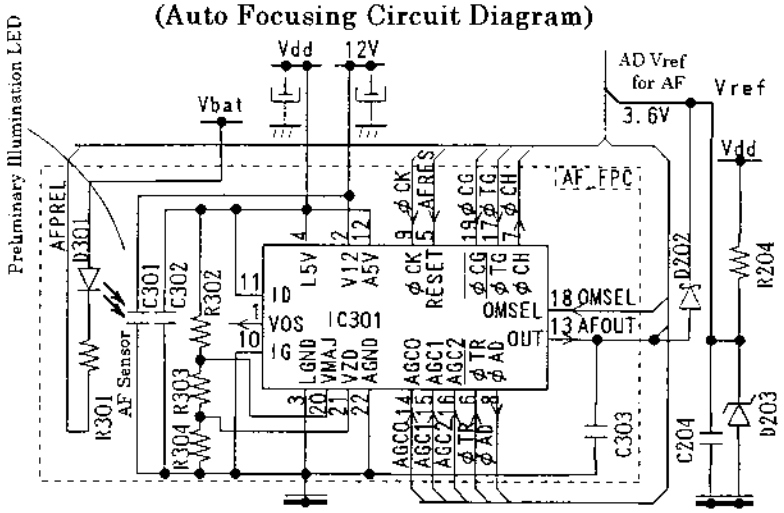
4-2. Temperature Detection

The circuit consists of the resistors R209 and R210 for regulated DC voltage division and the light metering IC 701.

Temperature data is obtained by calculation based on the 2 V regulated DC voltage input (TAD) to CPU3, which is not dependent on temperature, and the analog reference voltage AVREF (typical voltage: 2.88 V under the conditions of 25±1.5℃ and Vdd=5V), which is directly proportional to the absolute temperature.

5. Auto Focusing Circuit

(Auto Focusing Circuit Diagram)



This circuit consists of the AF-IC (IC 301) incorporating CCD, the dividing resistors R302, R303 and 304, the Schottky diode D202 for AF output protection, the power supply bypass capacitors C301 and C302, the capacitor C303 for noise elimination, the Zener diode D203, resistors R204 and capacitor C204 for analog reference voltage generation, the AF Preliminary Illumination LED D301 and the resistor R301 for LED current limiting.

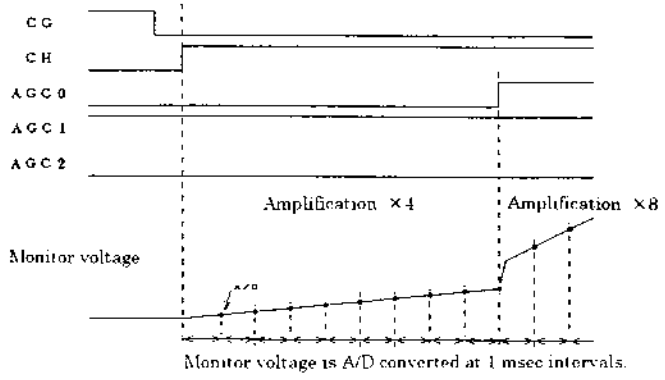
The voltage of VDD (5 V) is divided by resistors and about 1.8 V is supplied to the pin 21 of the AF-IC and about 3 V to the pin 20. By the pin 21, the reference voltage inside the AF-IC is set to about 1.8 V. By the pin 22, the saturation voltage at sensor charge accumulator is set to 1.2 V. The analog reference voltage, which is 3.6 V, is generated by the Zener diode D203 for VDD (5 V).

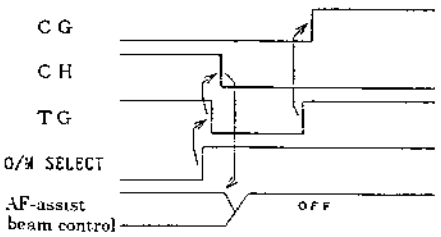
The AF-IC is controlled by CPU2. When the O/M selection signal (O/M) turns "Lo" and the accumulation start signal (ϕCG) turns "Hi"→"Lo", accumulation is started and the accumulation signal output (ϕCH) turns "Lo"→"Hi" (accumulating). During accumulation, CPU2 receives the AF output (AFAD) and sets the amplification change signals (AGC0, AGC1 and AGC2) so that the required amount of accumulation is obtained (see table at right). When the required accumulation has been attained, the O/M selection signal is turned "Hi". At this point, the accumulation signal output (ϕCH) turns "Hi"→"Lo" (accumulation completed).

AGC2	AGC1	AGC0	Amplif.
0	0	0	1
0	0	1	2
0	1	0	4
0	1	1	8
1	0	0	16
1	0	1	1
1	1	0	32
1	1	1	64

At data transfer, the turning "Hi"→"Lo" of the timing clock output (ϕAD) indicates that the sensor output after picture element charge has been stabilized. At this point, CPU2 turns the transfer timing clock (ϕTR) "Lo"→"Hi" and reads in the AF output (AFAD). After read-in by CPU2, the transfer timing clock (ϕTR) is turned "Hi" → "Lo" and the next picture element data is requested. According to this request, the AF-IC turns the timing clock output (ϕAD) "Lo"→"Hi" to charge the picture element.

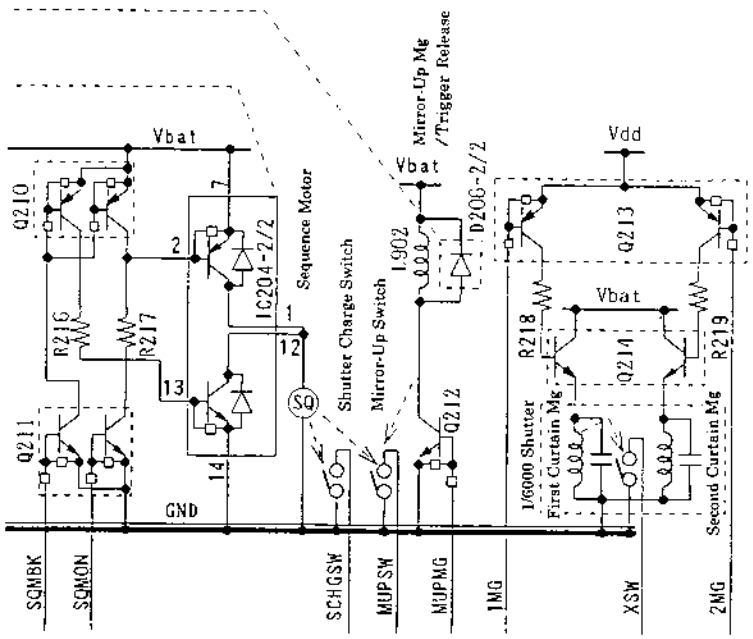
The Preliminary Illumination LED lights up when the control signal (AFPREL) of CPU2 is turned "Lo".





6. Mirror and Shutter Drive Circuit

(Mirror and Shutter Drive Circuit Diagram)



6-1. Mirror Up

The circuit consists of the plunger L902, the diode D206 for absorbing of plunger counter electromotive force and the transistor Q212 for driving.
When the control signal (MUPMG) from CPU3 turns "Hi", the plunger is energized to start mirror up. At completion of mirror up, CPU3 detects the turning "Hi"→"Lo" of the Mirror-Up Switch (MUPSW).

6-2. Shutter Control

The circuit consists of the Shutter, the transistor Q214 for driving, transistor Q213 for predriving and the resistors R218 and R219 for base current limiting.
First, the first curtain control signal (1MG) and second curtain control signal (2MG) from CPU2 are turned "Lo" to energize both magnets. When mirror up is performed with the magnets energized, the shutter trigger is released but both curtains are held. After that, when the second curtain control signal (XSW) is turned "Hi", the second curtain is released. When the first curtain has been released, CPU2 detects the turning "Hi"→"Lo" of the X signal (XSW).

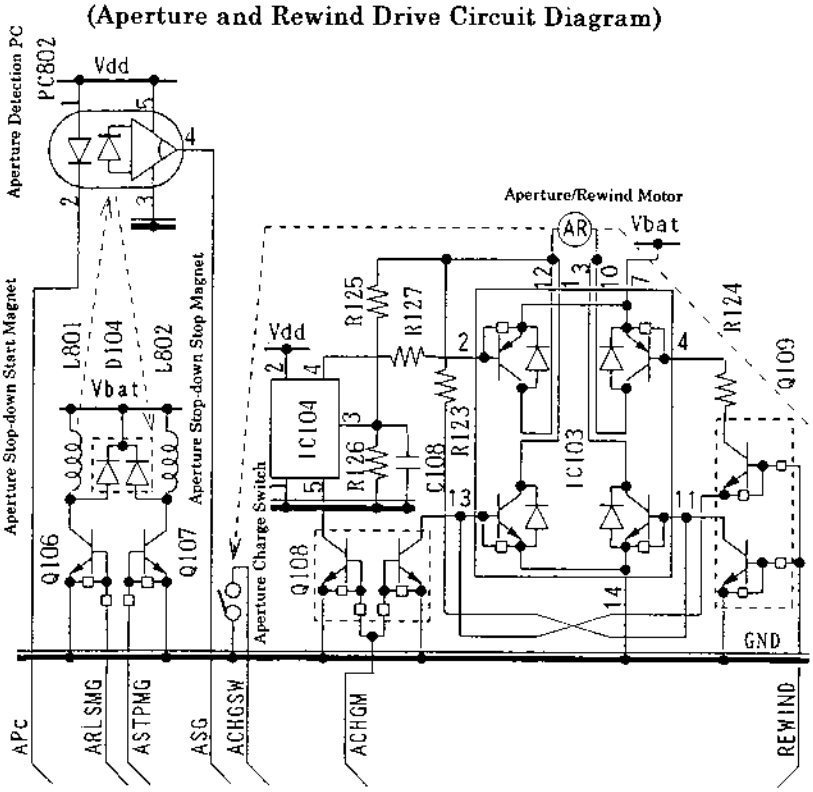
6-3. Mirror Down and Shutter Charge

The circuit consists of the Sequence Motor, the motor driver IC 204, the transistors Q211 and Q210 for predriving and the resistors R211 and R217 for base current limiting.
The motor is controlled as shown at right by the motor forward run signal (SQMON) and motor brake signal (SQMBK) from CPU3.
At completion of mirror down and shutter charge, CPU3 detects the turning "Hi" → "Lo" of the Shutter Charge Switch signal (SCHGSW).

SQMON	SQMBK	Operation
Lo	Lo	Free
Hi	Lo	Mirror down & Shutter charge
Lo	Hi	Brake
Hi	Hi	Brake

7. Aperture and Rewind Drive Circuit

(Aperture and Rewind Drive Circuit Diagram)



7-1. Aperture Stop Down

The circuit consists of the plungers L801 and L802, the diode D104 for absorbing of plunger counter electromotive force, the transistors Q106 and Q107 for driving, the photo-interrupter PC802 and the resistor R202 for LED current limiting.

When the aperture stop-down start control signal (ARLSMG) from CPU3 is turned "Hi", the plungers are energized to start aperture stop-down. On the other hand, CPU3 turns the aperture LED control signal (APC) "Lo" and counts the aperture pulse signals (ASG) to detect the aperture stop-down value. Upon reaching the requested aperture value, the aperture stop-down stop control signal (ASTPMG) from CPU3 is turned "Hi", so that the plungers are energized to complete aperture stop-down.

7-2. Aperture Charge and Rewinding

The circuit consists of the Aperture Motor, the motor driver IC 103, the transistors Q108 and Q109 for predriving and protection, the resistors R123, R124 and R127 for base current limiting, the regulator IC104, resistors R125 and R126, and the capacitor C108.

The motor is controlled as shown table at right by the motor forward run signal (ACHGM) and motor reverse run signal (REWIND) from CPU3. In the control of forward run, this circuit works as the regulated DC voltage drive circuit.

ACHGM	REWIND	Operation
Hi	Lo	Free
Hi	Lo	Aperture charge
Lo	Hi	Rewinding
Hi	Hi	Brake

At completion of aperture charge, CPU3 detects the turning "Hi"→"Lo" of Aperture Charge Switch (ACHGSW). CPU3 counts Perforation Switch (PFOSW) to detect the rewound film travel.

Terminal No.	Terminal Name	Symbol Name	I/O	Functions
72	SI12A	SI12	I	CPU 2 communication
73	SO12A	SO12	O	Adjusting Tool communication
74	SCK12A	SCK12	O	
75	ST SDA	ST SDA	I	Flash communication data signal from CPU1 Serial output
76	ST SDA	SDA	O	Serial input
77	ST SCK	ST SCK	O	Flash communication from CPU1 Serial clock
78	Not used	—	—	Free pin treatment (shorted to GND)
79	X2	5MHz		Main clock 5 MHz
80	X1	5MHz		Main clock 5 MHz
81	Vdd	Vcc		VCC power input (5 V)
82	32KHz			Sub clock 32 kHz
83	32KHz			Sub clock 32 kHz
84	RESET		I	System reset input at "L"
85	ST SDA	ST SDA	I	Flash communication data signal from CPU1 Interrupt input
86	Back Cover SW	B.COV	I	Detection of Back Cover Open/Close Switch ("H": close, "L": open)
87	Dial Turn Dtection	SPTG	I	Detection of both edges of dial turning "L": Active
88	Main SW	MAIN	I	Main Switch detection (ON : "L", OFF : "H")
89	TEST	ADJTST	I	Test terminal for adjustment (Test adjusting mode : "L")
90	ADJREQ	ADJREQ	I	Request signal at terminal for Auto Adjusting Tool
91	Check SW	S1	I	Check Switch detection (ON : "L", OFF : "H")
92	Shutter Release SW	S2	I	Shutter Release Switch detection (ON : "L", OFF : "H")
93	Rewind SW	REW	I	Rewind Switch detection (ON : "L", OFF : "H")
94	Preview SW	PVIEW	I	Preview Switch detection (ON : "L", OFF : "H")
95	Exposure Check SW	DWU ECHK	I	Exposure Check Switch detection (ON : "L", OFF : "H")

DESCRIPTION OF FUNCTIONS OF IC TERMINALS

< IC102 > CPU 1

Terminal No.	Terminal Name	Symbol Name	I/O	Functions
1	Shutter Time	TIMEAD	I	Shutter time setting value (4" ~ 1/4000)
2	Exposure Mode	EMODAD	I	Exposure mode setting value (Av, Tv, P, M, X, B, ISO, CF)
3	A.B.C. Setting	ABCAD	I	A.B.C. setting value (0, ±0.5, ±1.0)
4	Exposure Compensation	ECAD	I	Exposure compensation setting value (– 2.0 ~ + 2.0, in 1/3 EV steps)
5	Drive Mode	DRVAD	I	Drive mode setting value (ELF10, 2, CH, CL, S, multiple)
6	Focus Mode	FMODAD	I	Focus mode setting value (MACRO, MF, SAF, CAF)
7	Not used	—	—	NC (circuit not connected)
8	AVdd	Vcc		Vcc power input (5 V)
9	AVREF	A/D VREF		Reference voltage input for A/D conversion
10	Light Metering Mode	AESEL	I	Light metering mode switching input "H": Average, "L": Spot
11	DB Release	DRS		"L": Interval release signal from Data Back
12	Vss	GND		GND
13	Not used	CPUSEL	I	Free pin treatment (connected to Vcc)
14	Not used	—	—	NC (circuit not connected)
15	AF Lock Switching	AFSEL	I	AF Lock switching "L": AF lock, "H": No AF lock
16	AE Lock	AEL	I	AE Lock "L": Active
17, 18	Not used	—	—	NC (circuit not connected)
19	Without θ compensation	LENS1	I	
20	With θ compensation	LENS0	I	

Lens	With compensation	Without compensation	No use
Without θ compensation	L	L	H
With θ compensation	H	H	H

21	M/A	ADJMA	I	Input terminal for switching between manual adjustment and Auto Adjusting Tool
22	C/D	ADJCD	I	Auto Adjusting Tool C/D signal command / data
23	COM0		—	External LCD common signal 0
24	COM1		—	External LCD common signal 1

Terminal No.	Terminal Name	Symbol Name	I/O	Functions
25	COM2		—	External LCD common signal 2
26	Not used	—	—	NC (circuit not connected)
27	BIAS			LCD reference power (VLCD) 5 V
28	VLC0	VLCD (5V)		LCD drive power input ports (1/3 bias) Generates 1/3 bias power from reference power VLCD by dividing by R111, 112 and 113.
29	VLC1	2/3VLCD3.4V		
30	VLC2	1/3VLCD1.7V		
31	Vss	GND		GND
32	SEG0		—	COM2 ISO / COM1 4f / COM0 4e
33	SEG1		—	4a / 4g / 4d
34	SEG2		—	4b / 4c /
35	SEG3		—	3f / 3e /
36	SEG4		—	3a / 3g / 3d
37	SEG5		—	EX / 3b / 3c
38	SEG6		—	Multiple / 2f / 2e
39	SEG7		—	2a / 2g / 2d
40	SEG8		—	DX / 2b / 2c
41	SEG9		—	Battery / 1f / 1e
42	SEG10		—	1a / 1g / 1d
43	SEG11		—	Film / 1b / 1c
44 ~ 58	Not used		—	NC (circuit not connected)
59	1ACK	1ACK	I	Response signal in CPU 1 ~ 2 communication
60	Open F 3	OFN03	I	Reading of open aperture value
61	Open F 2	OFN02	I	Reading of open aperture value
62	Open F 1	OFN01	I	Reading of open aperture value
63	Open F 0	OFN00	I	Reading of open aperture value
64 ~ 66	Not used	—	—	NC (circuit not connected)
67	1REQ	1REQ	O	Request signal in CPU 1 ~ 2 communication
68	ADJACK	ADJACK	O	Auto Adjusting Tool response signal
69	Not used	—	—	NC (circuit not connected)
70	CPU 2, 3 RESET	CPURES	O	Starts CPU 2, 3 by "H" output from CPU 1
71	PH-CONT	POW0	O	"H": Vdd, DC/DC "ON"

Terminal No.	Terminal Name	Symbol Name	I/O	Functions
96	AF Lock SW	AFSW	I	AF Lock Switch detection (ON : "L", OFF : "H")
97	DOWN SW	DOWN	I	DOWN Switch detection (ON : "L", OFF : "H")
98	UP SW	UP	I	UP Switch detection (ON : "L", OFF : "H")
99	AVss	GND		GND
100	Aperture Stop-down Steps	APAD	I	Detection of aperture stop-down value

< IC201> CPU 2

Terminal No.	Terminal Name	Symbol Name	I/O	Functions
1 ~ 3	Not used		—	NC (circuit not connected)
4	AVss	GND		GND
5	USM Frequency Control	USMFDA	O	Control of USM revolving speed (frequency control side)
6	USM Voltage Control	USMPDA	O	Control of USM revolving speed (voltage control side)
7	AV REF1	D/A VREF		D/A Converter reference voltage
8	SI21	SI21	I	CPU 1 communication
9	SO21	SO21	O	
10	SCK21	SCK21	I	
11	SI23	SI23	I	CPU 3 communication
12	SO23C	SO23	O	TTL Flash Auto IC communication
13	SCK23C	SCK23	O	
14, 15	Not used	—	—	NC (circuit not connected)
16	SIEEP	SIROM	I	EEPROM communication
17	SOEEP	SOROM	O	
18	SCKEEP	SCKROM	O	
19	AGC2	AGC2	O	AF IC control signal
20	AGC1	AGC1	O	AF IC control signal
21	AGC0	AGC0	O	AF IC control signal
22	ϕCG	ϕCG	O	AF IC control signal

Terminal No.	Terminal Name	Symbol Name	I/O	Functions
23	O/M	OM	O	AF IC control signal
24	AF Reset	AFRES	O	AF IC control signal
25	ϕTR	ϕTR	O	AF IC control signal
26	ϕTG	ϕTG	O	AF IC control signal
27	Viewfinder BL0	FBL0	O	Dark side of LCD back light in viewfinder "H": Active
28	Viewfinder BL1	FBL1	O	Bright side of LCD back light in viewfinder "H": Active
29	AF-assist Beam LED	ASIST	O	AF-assist Beam LED Lighting at "H"
30	BFLED	BFPC	O	Pnoto-coupler LED for detection of Movable Body travel
31	2REQ	2REQ	O	Request signal in CPU 2 ~ 3 communication
32	1ACK	1ACK	O	Response signal in CPU 2 ~ 3 communication
33	Vss	GND		GND
34	SMg1	1MG	O	First Curtain Magnet control (Hold : "L", Release : "H")
35	SMg2	2MG	O	Second Curtain Magnet control (Hold : "L", Release : "H")
36	Flash AX	STAX	O	Flash AX signal (Lighting : "L", Going out : "H")
37	PRNLED	PRNING	O	LED during compiled data imprinting "L": Active
38	AF Preliminary Illumination	AFPREL	O	AF preliminary illumination "L": Active
39	Self-timer LED	SELF	O	Self-timer LED (Lighting: "L", Going out: "H")
40	TTL Flash Auto Control CS	FACS	O	TTL Flash Auto IC chip selection
41	CHC	CHC	O	Accumulation control for TTL Flash Auto control (Start of TTL Flash Auto control : "H"→"L")
42	EEPCS	ROMCS	O	EEPROM chip selection
43 ~ 45	Not used	—	—	NC (circuit not connected)
46	AFMON	USMON	O	AF drive ON—OFF "H": Active
47	AFMDIR	USMDIR	O	Designation of Movable Body moving direction Close-up direction at "H"

Terminal No.	Terminal Name	Symbol Name	I/O	Functions
48	Not used	—	—	NC (circuit not connected)
49	AF Clock	AFCK		AF clock 312.5 kHz
50	AF Buzzer	BUZZ		Buzzer output
51	Not used	—	—	NC (circuit not connected)
52	DX0	DX0	I	DX code read terminal
53	DX1	DX1	I	
54	DX2	DX2	I	
55	DX3	DX3	I	
56	DX4	DX4	I	
57	DX5	DX5	I	Code read terminal for number of film frames
58	DX6	DX6	I	
59	DX7	DX7	I	
60	CPU 2, 3 Reset	COURES	I	CPU 2 operation allowed at "H"
61	1REQ	1REQ	I	Request signal in CPU 1 ~ 2 communication
62	AF Pulse	BFSG	I	Movable Body travel detection pulse
63	ϕCH	ϕCH	I	AF IC control signal
64	ϕAD	ϕAD	I	AF IC control signal
65	2ACK	2ACK	I	Response signal in CPU 1 ~ 3 communication
66	CHI/O(CHS)	CUPCHS	I	Flash ready, TTL Flash Auto control signal
67	Cartridge Detect SW	PTRNSW	I	Cartridge presence/absence detection (Film present : "L", absent : "H")
68	Vdd	Vdd		Vdd power input (5 V)
69	X2	5MHz		Main clock 5 MHz
70	X1	5MHz		Main clock 5 MHz
71	IC (Vpp)			GND
72, 73	Not used	—	—	NC (circuit not connected)
74	Avdd	AVdd		Vdd power input (5 V)
75	AV REF0	A/D VREF	I	Reference voltage (3.6 V) for A/D conversion of AF IC output
76	AFOUT	AFOAD	I	AF IC output voltage
77	Pressure Plate Base SW	PBASSW	I	Pressure Plate Base detection switch (ON : "L", OFF : "H")

Terminal No.	Terminal Name	Symbol Name	I/O	Functions
78	AFENDM	BFMSW	I	AF Macro end detection switch (ON : "L", OFF : "H")
79	AFENDI	BFISW	I	AF infinity end detection switch (ON : "L", OFF : "H")
80	Not used	—	—	NC (circuit not connected)

< IC 202 > CPU 3

Terminal No.	Terminal Name	Symbol Name	I/O	Functions
1	Light Metering Input	AEAD	I	light Metering IC output
2	Temperature Detection	TAD	I	Reference voltage for temperature detection (Input of regulated DC voltage of 1.5 V)
3	Light Metering SEL0, 2	AESEL0	O	0, 1, 2 = "H": Average metering selected 1 = "H"; 0, 2 = "L": Spot metering selected All "L": No selection with SPD shorted to GND
4	Light Metering SEL1	AESEL1	O	
5 ~ 7	Not used	—	—	NC (circuit not connected)
8	AVdd	AVdd		Vdd power input (5 V)
9	AVREF	A/D VREF		Reference voltage for light metering and battery check
10	Aperture LED	APC	O	Detection of aperture stop-down pulse
11	Winding LED	SPOLPC	O	Detection of spool pulse
12	Vss	GND		GND
13	Not used	CPUSEL	I	Free pin treatment (shorted to GND)
14	Not used	—	—	NC (circuit not connected)
15	Aperture Motor 1	RENIND	O	Control of Rewind Motor
16	Aperture Motor 2	ACHGM	O	Control of Aperture Charge Motor
17	Sequence Motor Forward Run	SQMON	O	Control of Mirror-Up, Down, Shutter Charge Motor
18	Sequence Motor Brake	SQMBK	O	Sequence Motor brake signal
19	Winding M1	WIND	O	Control of Winding Motor

Terminal No.	Terminal Name	Symbol Name	I/O	Functions		
20	Winding M2	WGRLS	O	At rewinding, Epicyclic Gear released at "H"		
21, 22	Not used	—	—	NC (circuit not connected)		
23	COM0		—	COM0 for LCD in viewfinder		
24	COM1		—	COM1 for LCD in viewfinder		
25	COM2		—	COM2 for LCD in viewfinder		
26	Not used	—	—	NC (circuit not connected)		
27	BIAS	BIAS		Shorted to VLC0		
28	VLC0	VLCD 5V		LCD drive power input ports (1/3 bias) Generates 1/3 bias power from reference power VLCD by dividing by R111, 112 and 113.		
29	VLC1	2/3V LCD3.4V				
30	VLC2	1/3V LCD1.7V				
31	Vss	GND		GND		
32	SEG0		—	COM0 BP2	COM1 6f	COM2 6e
33	SEG1		—	6a	6g	6d
34	SEG2		—	BP1	6b	6c
35	SEG3		—	BP0	5f	5e
36	SEG4		—	5a	5g	5d
37	SEG5		—	Flash ready	5b	5c
38	SEG6		—	Rear focus	In-focus	Front focus
39	SEG7		—	BPA	4f	4e
40	SEG8		—	4a	4g	4d
41	SEG9		—	DP2	4b	4c
42	SEG10		—	BP5	3f	3e
43	SEG11		—	3a	3g	3d
44	SEG12		—	BP4	3b	3c
45	SEG13		—	—	2f	2e
46	SEG14		—		2g	2a 2d
47	SEG15		—	Spot	2c	2bDP1
48	SEG16		—	Average frame	1f	1e
49	SEG17		—	a1b1c	1g	1d
50	SEG18		—	Under	10f	10e

Terminal No.	Terminal Name	Symbol Name	I/O	Functions		
51	SEG19		—	COM2 10a	COM1 10g	COM0 10d
52	SEG20		—	Over	10b	10c
53	SEG21		—	BP3	9f	9e
54	SEG22		—	9a	9g	9d
55	SEG23		—	7f	9b	9c
56	SEG24		—	7c7d7e7g	8f	8e
57	SEG25		—	8a	8g	8d
58	SEG26		—		8b	8c
59 ~ 63	Not used	—	—	NC (circuit not connected)		
64	Aperture Stop-down Control Mg	ASTPMG	O	Signal to magnet for aperture stop-down stop (Stop : "H")		
65	Aperture Stop-down Start Mg	ARLSMG	O	Signal to magnet for aperture stop-down start (Start : "H")		
66	Mirror-Up Mg	MUPMG	O	Signal to magnet for mirror up and shutter trigger release (Release ON : "H")		
67	One Revolution Mg	IRTMG	O	Signal to magnet for one revolution limit release of winding (Release ON : "H")		
68	DB PRN	PRN	O	Data Back imprinting signal "H": Active		
69	BCC	BCC	O	Battery check timing signal "H": Active		
70	DB DCS	DCS	O	Data Back chip select signal		
71	2ACK	2ACK	O	Response signal in CPU 2 ~ 3 communication		
72	SI32	SI23	I	CPU 2 ~ 3 serial communication		
73	SO32	SO23	O			
74	SCK32	SCK32	I	CPU 2 ~ 3 serial communication clock		
75	DB DSI	DSI	I	Data Back communication		
76	DB DSO	DSO	O			
77	DB DCK	DCK	O	Data Back communication		
78	IC (Vpp)			Connected to GND		
79	X2	5MHz		Main clock 5 MHz		
80	X1	5MHz		Main clock 5 MHz		
81	Vdd	Vdd		Vdd power input 5 V		
82	XT1	XT1	I	Connected to GND		

Terminal No.	Terminal Name	Symbol Name	I/O	Functions
83	Not used	—	—	NC (circuit not connected)
84	CPU 2, 3 Reset	CPURES		Operation of CPU 3 allowed at "H"
85	2REQ	2REQ	I	Request signal in CPU 2 ~ 3 communication
86	Aperture Pulse	ASG	I	Detection of travel of Aperture Stop-down Lever
87	Spool Pulse	SPOLSG	I	Signal for compiled data imprinting
88	LMP	LMP	I	Data Back lamp signal "L": Active
89	DB DHS	DHS	I	Data Back handshake signal
90	DB TMP	TMP	I	Signal of waiting for Data Back display stabilization
91	Mirror-Up SW	MUPSW	I	Mirror up detect Switch (Mirror up : "H")
92	Shutter Charge SW	SCHGSW	I	Shutter charge detect Switch
93	Aperture Charge SW	ACHGSW	I	Aperture charge detect Switch
94	Perforation SW	PFOSW	I	Film perforation signal
95	One Revolution Limit SW	IRTSW	I	One revolution limit switch for film winding control
96 ~ 98	Not used	—	—	NC (circuit not connected)
99	AVss	GND		GND
100	BC	BCAD	I	Battery level analog input

* Each I/O specified below is that on the device. I/O on the CPU is opposite.

< IC101 > Detector IC (for system reset)

Terminal No.	Terminal Name	I/O	CPU Symbol Name	Functions
1	OUT	O	RESET	Outputs "L" when Vcc is 2.7 V or lower. System reset.
2	IN	I	—	Input to detector. Monitoring of Vcc voltage.
3	Vss	—	—	Connected to GND.
4, 5	Not used	—	—	NC (circuit not connected)

< IC103 > Motor Drive IC (for aperture charge and rewinding)

Terminal No.	Terminal Name	I/O	CPU Symbol Name	Functions	
1	PNP1 Collector	O	—	Aperture charge at ON (H).	· When CPU output signal "ACHGM" = "H", Pin 2 = "L" and Pin 11 = "H". Voltage at Pin 2 is controlled by regulated DC voltage circuit and aperture charge is performed.
2	PNP1 Base	I	—	Output of "H" to Pin 1 at "L".	
3	PNP2 Collector	O	—	Rewinding at ON (H).	
4	PNP2 Base	I	—	Output of "H" to Pin 3 at "L".	
5, 6	Not used	—	—	NC (circuit not connected)	
7	PNP Emitter	—	—	Common PNP emitter. Vbat	· When CPU output signal "REWIND"= "H", Pin 13 = "H". Rewinding is performed by full ON drive.
8, 9	Not used	—	—	NC (circuit not connected)	
10	PNP2 Collector	O	—	Aperture charge at ON (L).	
11	PNP2 Base	I	—	Output of "L" to Pin 10 at "H".	
12	PNP1 Collector	O	—	Rewinding at ON (L).	
13	PNP1 Base	I	—	Output of "L" to Pin 12 at "H".	
14	NPN Emitter	—	—	Common NPN emitter. GND	

< IC104 > Regulator IC (for control of regulated DC voltage to Aperture Motor for charge)

Terminal No.	Terminal Name	I/O	CPU Symbol Name	Functions
1	Vss	—	—	Connected to GND.
2	Vdd	—	—	Connected to Vdd.
3	Vin	I	—	Feedback input for keeping the voltage to be applied to Aperture Motor at 4 V.
4	Vout	O	—	Output of "L" to control the voltage to be applied to Aperture Motor at 4 V.
5	CE	I	—	Regulated DC voltage circuit ON at "L".

< IC203 > EEPROM (memory of adjusted values and system status)

Terminal No.	Terminal Name	I/O	CPU Symbol Name	Functions
1	RB	O	—	Status signal. NC (circuit not connected).
2	Vcc	—	—	Connected to Vdd
3	CS	I	ROMCS	Serial communication with IC201 is passibled at "L".
4	SK	I	SCKROM	Clock input for serial communication.
5	DI	I	SOROM	Data input of serial communication.
6	DO	O	SIROM	Data output of serial communication.
7	Vss	—	—	Connected to GND.
8	WC	I	—	Writing control signal. Writing is prohibited at "H". Connected to GND.

< IC204 > Motor Drive IC (for Winding and Epicyclic Gear Release Motor and Sequence Motor (Shutter and Mirror))

Terminal No.	Terminal Name	I/O	CPU Symbol Name	Functions	
1	PNP1 Collector	O	—	Charge of shutter and mirror at ON (H)	· When CPU output signal "WIND" = "H", Pin 4 = "L" and Pin 9 = "H". Winding is performed. · When CPU output signal "WGRLS" = "H", Pin 6 = "L" Pin 11 = "H". Epicyclic Gear release performed. · When CPU output signal "SQMON" = "H", Pin 2 = "L". Charge of shutter and mirror is performed. · When CPU output signal "SQMBK" = "H", Pin 13 = "H". Short brake to Sequence Motor is applied.
2	PNP1 Base	I	—	Output of "H" to Pin 1 at "L".	
3	PNP2 Collector	O	—	Winding at ON (H).	
4	PNP2 Base	I	—	Output of "H" to Pin 3 at "L".	
5	PNP3 Collector	O	—	Epicyclic Gear release at ON (H).	
6	PNP3 Base	I	—	Output of "H" to Pin 5 at "L".	
7	PNP Emitter	—	—	Common PNP emitter. Vbat	
8	NPN3 Collector	O	—	Winding at ON (L).	
9	NPN3 Base	I	—	Output of "L" to Pin 8 at "H".	
10	NPN2 Collector	O	—	Epicyclic Gear release at ON (L).	
11	NPN2 Base	I	—	Output of "L" to Pin 10 at "H".	
12	NPN1 Collector	O	—	Short brake to Sequence Motor at ON (L).	
13	NPN1 Base	I	—	Output of "L" to Pin 12 at "H".	
14	NPN Emitter	—	—	Common NPN emitter. GND	

< IC301 > AF IC

Terminal No.	Terminal Name	I/O	CPU Symbol Name	Functions
1	VOS	O	VOS	Test terminal
2	12V	—	V12	12 V power input
3	LGND	—	LGND	GND terminal (logic system)
4	5V	—	L5V	5 V power input (power to logic system)
5	RES	I	RESET	Reset at "L": initialize and high-speed discharge at 250 kHz.
6	ϕTR	I	ϕTR	Input terminal for transfer timing clock.
7	ϕCH	O	ϕCH	Accumulation signal output terminal (during accumulation : "H")
8	ϕAD	O	ϕAD	Output of A/D timing clock
9	OOK	I	CK	Input of basic clock (500 kHz)
10	IG	I	IG	Test terminal
11	ID	—	ID	Test terminal
12	A5V	—	A5V	5 V power input (power to analog system)
13	OUT	O	OUT	Analog signal output terminal
14	AGC0	I	AGC0	Input terminal for amplification switching signal (For test)
15	AGC1	I	AGC1	
16	AGC2	I	AGC2	
17	ϕTG	I	ϕTG	Trigger pulse input terminal for shift pulse generation
18	O/M	I	O/M	Selection of output signal ("H": sensor, "L": monitor)
19	ϕCG	I	ϕCG	Accumulation start signal input ("H"→"L": start)
20	VMAJ	I	VMAJ	Reference voltage adjusting terminal for internal comparator (3 V)
21	VZD	—	VZD	Reference voltage power for operational amplifier (1.8 V)
22	AGND	—	AGND	GND terminal (analog system)

AGC0	0	1	0	1	0	1	0	1
AGC1	0	0	1	1	0	0	1	1
AGC2	0	0	0	0	1	1	1	1
Amplification	1	2	4	8	16	1	32	64

< IC401 > USM Drive IC (for inner body drive)

Terminal No.	Terminal Name	I/O	CPU Symbol Name	Functions	
1	OC	I	USMON	Motor runs at "H" input.	
2	CW/CCW	I	USMDIR	Toward mount (∞) at "L", toward Back Cover (close distance) at "H"	
3 ~ 7	Not used	—	—	NC (circuit not connected)	
8	RT	—	—	Oscillation circuit. Connection by resistor. 1.61 V	
9	CT	—	—	Oscillation circuit. Connection by capacitor. Saw-tooth wave.	
10	GND	—	—	Connected to GND.	
11	IN+B	I	USMFDA	Frequency control input. Voltage input for V→f conversion.	When voltage : low→high, Frequency : high→low Revolving speed : low→high
12	IN−B	I	—	Voltage follower input.	
13	OUTB	O	—	Input voltage buffer output for V→f conversion.	
14	IN−C	I	USMPDA	PWM (pulse width) control input. When voltage changes low→high, revolving speed changes high→low.	
15	E1	O	—	Plus side output of SIN wave push-pull	
16	E2	O	—	Plus side output of COS wave push-pull	
17	E3	O	—	Minus side output of SIN wave push-pull	
18	E4	O	—	Minus side output of COS wave push-pull	
19	Vref	O	—	Reference voltage output. NC (circuit not connected)	
20	Vcc	—	—	Connected to Vdd.	

< IC501 > DC/DC Converter IC

Terminal No.	Terminal Name	I/O	CPU Symbol Name	Functions
1	12V IN	I	POWER IN	12V AC voltage input
2	Anode	—	ANODE	5V AC voltage input
3	Collector	O	COLLECTOR	Coil primary-side control terminal
4	GND	—	GND	GND terminal
5, 6	Not used	—	—	NC (circuit not connected)
7	VB	—	VIN	Battery voltage input
8	CONT	I	CONTROL	Operation control terminal ("L": Active)
9	12V OUT	O	POWER OUT	12V output
10	Not used	—	—	NC (circuit not connected)
11	CLM	I	CLM	Current feedback terminal (connected to GND)
12	Emitter	—	EMITTER	GND of coil control terminal
13	Cathode	—	CATHODE	5V feedback
14	VOUT	O	OUTPUT 1	5V output

< IC502 > Regulator IC (on DC/DC Converter Board, 5V output)

Terminal No.	Terminal Name	I/O	CPU Symbol Name	Functions
3	OUT	O	—	5V output
2	IN	I	—	Connected to Vbat
1	Vss	—	—	Connected to GND
4, 5	Not used	—	—	NC (circuit not connected)

< IC601 > TTL Flash Auto IC

Terminal No.	Terminal Name	I/O	CPU Symbol Name	Functions
1	GND	—	GND	GND terminal
2	CS1	I	CS1	Chip select signal (selection at "L": from CPU)
3	CS2	I	CS2	Connected to GND
4	SDI	I	SDI	Serial data in : input of ISO data from CPU
5	SCK	I	SCK	Serial clock : input of clock from CPU
6	CHC	I	CHC	TTL Flash Auto control start signal (TTL Flash Auto control during "L")
7	CHS	O	CHS	TTL Flash Auto control stop signal (stop at rise)
8 ~ 11	Not used	—	—	NC (circuit not connected)
12	VTH	—	VTH	Reference voltage for TTL Flash Auto control integration (changing by ISO)
13	VS	O	VS	Reference voltage output terminal (TYP 1.22V)
14	PDK	—	PDK	Internal SPD connecting terminal : cathode
15, 16	Not used	—	—	NC (circuit not connected)
17	PDC	—	PDC	Internal SPD connecting terminal : anode
18	VCC	—	VCC	Power supply terminal (connected to Vdd)

< IC701 > Light Metering IC

Terminal No.	Terminal Name	I/O	CPU Symbol Name	Functions
1	SEL0	I	SEL0	Divided light metering select terminal SEL0=SEL1=SEL2="L" : Average metering SEL0=SEL2="L", SEL1="H" : Spot metering
2	SEL1	I	SEL1	
3	SEL2	I	SEL2	
4	GND	—	GND	GND terminal
5, 6	Not used	—	—	NC (circuit not connected)
7	VCC	—	VCC	Power supply input (Vdd≒4.8V connected)
8 ~ 12	Not used	—	—	NC (circuit not connected)
13	V0	O	V0	Light metering output terminal
14	Vref	O	Vref	Reference voltage output terminal (TYP 2.88V)
15	Not used	—	—	NC (circuit not connected)

DESCRIPTION OF FUNCTIONS OF ELECTRIC PARTS

Symbol	Name	Block	Functions
R 101	Resistor	Power supply	Reset time constant
R 102	Resistor	CPU1	Oscillation limiting resistance
R 103	Resistor	CPU1	Pull-down at reset
R 104	Resistor	Adjusting Tool	Pull-up resistance
R 105	Resistor	Dial input	Stabilization at Top Cover removal
R 106	Resistor	Dial input	Stabilization at Top Cover removal
R 107	Resistor	Dial input	Stabilization at Top Cover removal
R 108	Resistor	Dial input	Stabilization at Top Cover removal
R 109	Resistor	Dial input	PUR for detection of dial turning
R 110	Resistor	Switch input	PUR (pull-up) for Main Switch
R 111	Resistor	Display	LCD bias resistance (3/3 Vcc)
R 112	Resistor	Display	LCD bias resistance (2/3 Vcc)
R 113	Resistor	Display	LCD bias resistance (1/3 Vcc)
R 114	Resistor	Switch input	PUR (pull-up) for Back Cover Switch
R 115	Resistor	Display	Self-timer LED resistance
R 116	Resistor	AF	AF-assist beam base resistance
R 117	Resistor	AF	Current regulation for AF-assist beam
R 118	Resistor	Flash	I/O PUR (pull-up) of SDA
R 119	Resistor	Flash	Protective resistance (SDA)
R 120	Resistor	Flash	Protective resistance (SCK)
R 121	Resistor	Flash	Protective resistance (AX)
R 122	Resistor	Flash	Protective resistance (CHI/O)
R 123	Resistor	Aperture	Aperture charge side
R 124	Resistor	Aperture	Rewinding control side
R 125	Resistor	Aperture	Control of 4V regulated DC voltage for aperture charge
R 126	Resistor	Aperture	Control of 4V regulated DC voltage for aperture charge
R 127	Resistor	Aperture	Voltage regulation for aperture charge
R 201	Resistor	CPU2	PC LED for body position detection
R 202	Resistor	CPU2	PC LED for aperture stop-down value detection
R 203	Resistor	Date	LED to show compiled data imprinting
R 204	Resistor	AF	Generation of AF ADVref
R 205	Resistor	Illumination in Viewf.	High-brightness side of back light
R 206	Resistor	Illumination in Viewf.	High-brightness side of back light
R 207	Resistor	Illumination in Viewf.	Low-brightness side of back light
R 208	Resistor	EEPROM	For no operation during CPU reset
R 209	Resistor	Temperature detection	Regulated DC voltage generation for temperature detection
R 210	Resistor	Temperature detection	Regulated DC voltage generation for temperature detection
R 211	Resistor	Film transport	Photo-interrupter LED current
R 212	Resistor	Film transport	Winding side
R 213	Resistor	Film transport	Epicyclic Gear release side
R 214	Resistor	Battery check	BC voltage detection (upper side)
R 215	Resistor	Battery check	BC voltage detection (lower side)
R 216	Resistor	Sequence	Short brake
R 217	Resistor	Sequence	Sequence Motor drive
R 218	Resistor	Shutter	First curtain drive
R 219	Resistor	Shutter	Second curtain drive

Symbol	Name	Block	Functions
R 301	Resistor	AF	Preliminary illumination
R 302	Resistor	AF	VZD, VMAJ bias voltage
R 303	Resistor	AF	VMAJ bias voltage
R 304	Resistor	AF	VZD bias voltage
R 305	Resistor	AF	Prevention of static electricity resistors (V12 terminal)
R 401	Resistor	USM	Frequency DA output level shift
R 402	Resistor	USM	Feedback resistance
R 403	Resistor	USM	Frequency variable width
R 404	Resistor	USM	Mirror current generation
R 405	Resistor	USM	PWMDA output level shift
R 601	Resistor	TTL Flash Auto	Integration amp source current assist
R 701	Resistor	Light metering	L output buffer compensation
R 702	Resistor	Light metering	Noise elimination (low-pass filter)
RA 201	Resistor Array 2	Date	Protective resistance (DWU, DRS)
RA 202	Resistor Array 2	Date	Protective resistance (TMP, DHS)
RA 203	Resistor Array 2	Date	Protective resistance (LMP, DSI)
RA 204	Resistor Array 2	Date	DCS gate (DSO, DCK)
*RA 205	Resistor Array 3	Display (OTP)	LCD bias resistance (1/3 bias)
RA 401	Resistor Array 4	USM	Transistor base resistance for USM drive
RA 402	Resistor Array 4	USM	Transistor B-E resistance for USM drive
VR 401	Variable Resistor	USM	Mirror current adjustment
D 101	Diode	CPU1	Nch output conversion
D 102	Diode	Dial input	Dial turning detection
D 103	Schottky Diode	Dial input	Dial turning detection
D 104	Diode	Aperture	Absorbing of plunger counter electromotive force
D 201	Diode	Date	DCS gate (DSO, DCK)
D 202	Schottky Diode	AF	AD input protection
D 203	Zener Diode	AF	Generation of AF ADVref
D 204	Diode	Light metering	Pch output conversion of CHS
D 205	Schottky Diode	EEPROM	Backup at power source loss
D 206	Diode	Film transport	Absorbing of plunger counter electromotive force
D 207	Zener Diode	Battery check	Voltage range shift (resolution up)
D 301	LED	AF	Preliminary illumination
D 501	Schottky Diode	Power supply	DC/DC 12V switching charge
D 502	Zener Diode	Power supply	IC501 input protection (counter electromotive force)
D 503	Schottky Diode	Power supply	For Vcc
D 801	LED	Display	Self-timer LED
D 802	LED	AF	AF-assist beam LED
D 901	LED	Display	Back Light in viewfinder
(D 902)	LED	Optional D.B.	Compiled data imprinting warning indicator
PC 801	Photo-interrupter	Peripheral FPC	Body position detection
PC 802	Photo-interrupter	Peripheral FPC	Aperture stop-down value detection
PC 901	Photo-interrupter	Film transport	Spool rotation value detection

Symbol	Name	Block	Functions
C 101	Capacitor	Power supply	Reset time constant
C 102	Capacitor	CPU1	Oscillation load capacity
C 103	Capacitor	CPU1	Oscillation load capacity
C 104	Capacitor	CPU1	CPU1 bypass capacitor
C 105	Capacitor	Power supply	Stabilization of Vdd (5V) output
C 106	Capacitor	CPU1	Bypass capacitor for CPU1 ADVref
C 107	Capacitor	CPU1	Prevention of runaway due to static electricity (Vcc)
C 108	Capacitor	Aperture	Control of 4V regulated DC voltage for aperture charge
C 201	Capacitor	CPU2	CPU2 bypass capacitor
C 202	Capacitor	CPU3	Stabilization of light metering AD Vref
C 203	Capacitor	CPU3	CPU3 bypass capacitor
C 204	Capacitor	AF	Stabilization of AF ADVref
C 205	Capacitor	EEPROM	Backup at power source removal
C 206	Capacitor	Battery check	Noise elimination (low-pass filter)
C 301	Missing number		
C 302	Capacitor	AF	5V power supply bypass capacitor
C 303	Capacitor	AF	Stabilization of AF analog output
C 401	Capacitor	USM	Power supply stabilization
C 402	Capacitor	USM	Saw-tooth wave generating integration
C 403	Capacitor	USM	Reduction of drive power impedance
C 501	Capacitor	Power supply	DC/DC 5V switching charge
C 502	Capacitor	Power supply	5V output low-pass filter
C 503	Capacitor	Power supply	DC/DC 12V switching charge
C 504	Capacitor	Power supply	Reduction of battery power impedance
C 505	Capacitor	Power supply	Stabilization of 12V power regulator output
C 506	Capacitor	Power supply	Stabilization of Vcc (5V) output
C 601	Capacitor	TTL Flash Auto	Power supply bypass capacitor
C 602	Capacitor	TTL Flash Auto	Integration capacitor
C 603	Capacitor	TTL Flash Auto	Close distance compensation
C 604	Capacitor	TTL Flash Auto	Stabilization of VS power
C 701	Capacitor	Light metering	Power supply bypass capacitor
C 702	Capacitor	Light metering	Noise elimination (low-pass filter)
C 901	Capacitor	AF	Prevention of runaway due to static electricity (Vdd)
IC 101	Detector	Power supply	Reset
IC 102	CPU	CPU1	
IC 103	Motor driver	Aperture	Aperture/Rewind Motor driver
IC 104	Regulator	Aperture	Control of 4V regulated DC voltage for aperture charge
IC 201	CPU	CPU2	
IC 202	CPU	CPU3	
IC 203	EEPROM	EEPROM	
IC 204	Motor Driver	Film transport	Winding/Epicyclic Gear/Sequence Motor
IC 301	AF IC	AF	Defocus value detection
IC 401	USM Driver	USM	USM driving oscillator
IC 501	DC/DC IC	Power supply	Circuit power, AF sensor CCD power
IC 502	Regulator	Power supply	5V output at DC/DC OFF
IC 601	TTL Flash Auto IC	TTL Flash Auto	TTL direct flash metering
IC 701	Light Metering IC	Light metering	TTL metering

Symbol	Name	Block	Functions
Q 101	Transistor	Power supply	Vdd Switch former stage, PH inversion input
Q 102	MOS Transistor	Dial input	Initialization of W UP Switch at power OFF
Q 103	Transistor	Display	Self-timer LED
Q 104	Transistor	AF	Current regulation for AF-assist beam
Q 105	Transistor	AF	AF-assist beam emitter drive
Q 106	Transistor	Aperture	Aperture stop-down start magnet
Q 107	Transistor	Aperture	Aperture stop-down stop magnet
Q 108	Transistor	Aperture	Aperture charge side
Q 109	Transistor	(Aperture)	Rewinding control side
Q 110	Transistor	Power supply	Vdd switch
Q 201	Transistor	Date	Output IF (DSO, DCK)
Q 202	Transistor	Date	Output IF (DCS, PRN)
Q 203	Transistor	Date	LED to show compiled data imprinting
Q 204	Transistor	TTL Flash Auto	CH I/O detection (C UP, CHS)
Q 205	Transistor	Illumination	LCD Illumination in viewfinder
Q 206	Transistor	Film transport	Winding one revolution limit release
Q 207	Transistor	Film transport	Winding side
Q 208	Transistor	Film transport	Epicyclic Gear release side
Q 209	Transistor	Battery check	For Battery Check Switch
Q 210	Transistor	Sequence	Protection against short / through-current
Q 211	Transistor	Sequence	Sequence Motor drive / for Q210
Q 212	Transistor	Sequence	Mirror up and shutter trigger release
Q 213	Transistor	Shutter	Regulated DC voltage predrive for shutter
Q 214	Transistor	Shutter	Regulated DC voltage drive for shutter
Q 401	Transistor	USM	USM drive transistor (cos) E1
Q 402	Transistor	USM	USM drive transistor (cos) E3
Q 403	Transistor	USM	USM drive transistor (sin) E2
Q 404	Transistor	USM	USM drive transistor (sin) E4
L 501	Coil	Power supply	For 5V output low-pass filter
L 801	Plunger	Aperture	Aperture stop-down start magnet
L 802	Plunger	Aperture	Aperture stop-down stop magnet
L 901	Plunger	Film transport	Winding one revolution limit release
L 902	Plunger	Sequence	Mirror up and shutter lock release
M 401	Transformer	USM	Voltage boosting (Vb=5V→Vpp=200V)
M 402	Transformer	USM	Voltage boosting (Vb=5V→Vpp=200V)
M 501	Transformer	Power supply	DC/DC boosting 2 output
X 101	Crystal Oscillator	CPU1	Sub clock
X 102	Ceramic Oscillation	CPU1	Main clock
X 201	Ceramic Oscillation	CPU2	Main clock
X 202	Ceramic Oscillation	CPU3	Main clock

FUNCTIONS OF SWITCHES

< Functions of External Switches > (see page A-5)

O Main Switch

This switch turns ON/OFF the power to the camera and switches AE Lock.

OFF	Main Switch OFF
↓↑	
ON	Main Switch ON
↓↑	
AEL	AE lock (Main Switch ON)

O Check Switch

When the Shutter Release Button is depressed halfway with the Main Switch turned ON, the Check Switch turns ON ("Hi"→"Lo") so that the circuit power is turned ON and the camera starts auto focusing and light metering operations.

O Shutter Release Switch

When the Shutter Release Button is depressed fully with the Main Switch turned ON, the Check Switch turns ON ("Hi"→"Lo") so that the shutter operates.

O Drive Mode Selector Dial

Set this dial, while pulling it up, to select one of the six drive modes.

$\overset{10}{\circlearrowleft}$	Self-timer 10 sec.
↑↓	
$\overset{2}{\circlearrowleft}$	Self-timer 2 sec.
↑↓	
CH	Continuous shooting (Max. 5 frames/sec.)
↑↓	
CL	Continuous shooting (Max. 3 frames/sec.)
↑↓	
S	Single frame shooting
↑↓	
▭	Multiple-exposure shooting (For setting, see "UP / Down Button".)

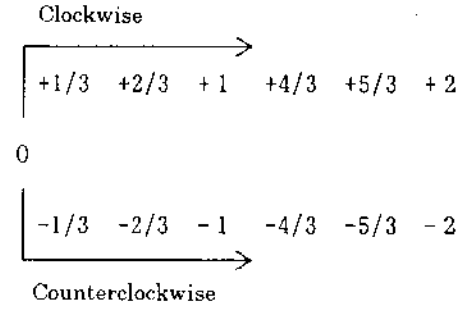
O Focus Mode Selector Lever

This lever selects a focusing mode.

MACRO	Macro
↑↓	
MF	Manual focusing
↑↓	
SAF	Single auto focusing
↑↓	
CAF	Continuous auto focusing

○ Exposure Compensation Dial

This dial sets a exposure compensation value in the range of +2 EV to −2 EV (setting in 1/3 EV steps possible).



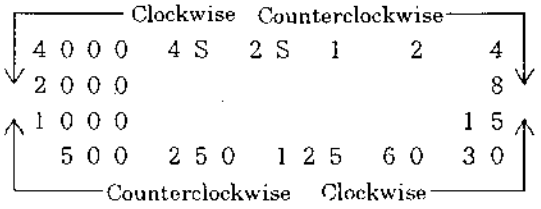
○ A.B.C. Lever

This lever selects one of two bracketing ranges for 3-frame continuous exposure control.

0	A.B.C. setting OFF
↑ ↓	
0.5	Setting of A.B.C. operation of ±0.5 EV
↑ ↓	
1	Setting of A.B.C. operation of ±1 EV

○ Shutter Speed Dial

This dial sets a shutter speed.



○ Exposure Mode Selector Lever

While pressing the Exposure Mode Lock Release Button, operate this lever to select one of five exposure modes and ISO or CF setting mode.

Av	Aperture Priority AE
↑ ↓	
Tv	Shutter Priority AE
↑ ↓	
P	Programmed AE
↑ ↓	
M	Manual exposure
↑ ↓	
X	Shooting with flash
↑ ↓	
B	Bulb
↑ ↓	
ISO	ISO setting
↑ ↓	
CF	CF setting

○ Metering Change Lever

This lever selects center-weighted average light metering or spot metering.

□ Center-weighted average light metering
↑↓
⊡ Spot metering

○ Exposure Check Button

With the Main Switch turned ON, press the Exposure Check Button to start light metering.

○ F Button (Focus Button)

Press of this button will start AF lock or AF action. The function varies with the setting of the F Dial.

○ F Dial

Focus Button function switching dial. This dial switches the functions of the Check Switch and those of the F Button.

AFL — AF action at Check Switch ON. AF lock by press of Focus Button.
↑↓
AF — No AF action at Check Switch ON. AF operation by press of Focus Button.

Functions Available by Combining the Focus Mode and F Dial

Focus Mode / F Dial position	MF	SAF	CAF
AF	Auto focusing is performed momentarily while the F Button is pressed.	Auto focus is activated at press of F Button. Focus locks after in-focus is achieved.	Focus action continues while F Button is pressed. Focus locks when it is released.
AFL		Auto focus is activated at pressing Shutter Release Button halfway. Focus locks after in-focus is achieved.	Focus action continues while Shutter Release Button is pressed halfway. Focus locks when F Button is pressed.

○ Rewind Lever

With the Main Switch turned ON, push and turn the Rewind Lock Release Button to start film rewinding action.

○ Depth of Field Preview Button

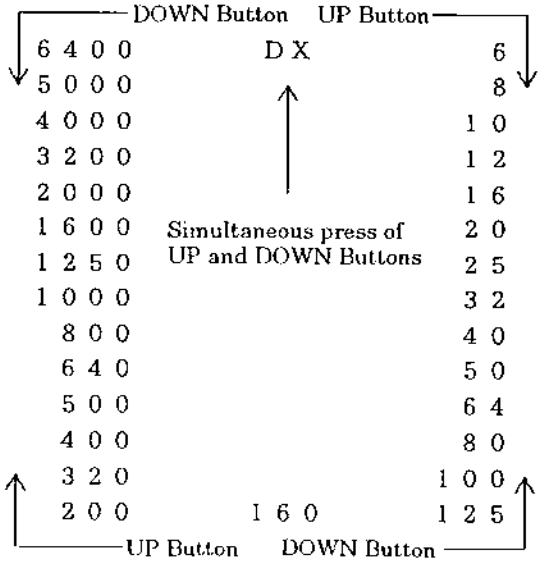
With the Main Switch turned ON, press the Depth of Field Preview Button when the exposure mode is Av, M, X or B. Then the camera will stop down the aperture to the value set on the Lens.

○ Cable Switch Socket

Turning ON of the Cable Switch with the Main Switch turned ON will activate shutter release operation.

○ UP / DOWN Button

① ISO setting (when Exposure Mode Selector Lever is in the "ISO" position)

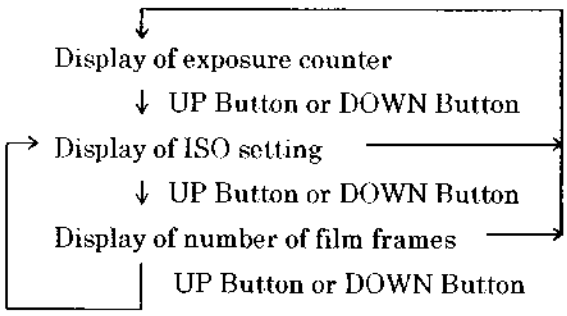


② Display of ISO setting or the number of film frames (when shooting is possible)

Canceling factors :

- Main Switch ON→OFF
- Pressing Shutter Release Button halfway (Check Switch ON)
- Auto power OFF (16 seconds later)
- Exposure Check Switch ON
- Setting of Drive Mode Selector Dial to ▭
- A.B.C. Lever operation
- Setting of Exposure Mode Selector Lever to "ISO" or "CF"
- Rewinding start
- Back Cover open

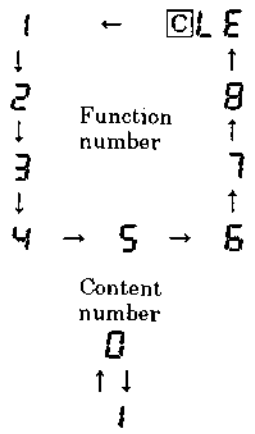
Counter is restored by a canceling factor.


Display of exposure counter
↓ UP Button or DOWN Button
Display of ISO setting
↓ UP Button or DOWN Button
Display of number of film frames
UP Button or DOWN Button

※ When the number of film frames can not be read (film is not DX-coded), the display of exposure counter and that of ISO setting are switched alternately, without displaying the number of film frames.

③ Custom function setting (when Exposure Mode Selector Lever is in the "CF" position)

Set a function number by the DOWN Button and a content number by the UP Button.



④ Multiple exposure count setting (when the content of CF function 2 is 0 and Drive Mode Selector Dial is in the ▭ position)

Set the number of exposures by the UP Button.

< Functions of Internal Switches >

O Back Cover Switch

This switch detects the opening and closing of the Back Cover.

"Hi" : Back Cover open
"Lo" : Back Cover closed

O Pressure Plate Base Switch

This switch detects that the Pressure Plate Base has been installed on the Movable Body.

"Hi" : Not installed
"Lo" : Installed

O Cartridge Detect Switch

This switch detects the presence or absence of a cartridge.

"Hi" : Cartridge absent
"Lo" : Cartridge present

O One Revolution Limit Switch

This switch is caulked to the Limit Lever. It, coupled with the winding sprocket, detects the completion of winding.

"Hi" : During winding
"Lo" : Completion of winding

O Sprocket Switch

- This switch is caulked to the Limit Cam. It, coupled with the winding sprocket, repeats ON→OFF→ON during one revolution of the sprocket, generates eight pulses and detects the completion of winding.
- At compiled data imprinting, little-by-little winding is controlled by the pulse from the Sprocket Switch.

O Mirror-Up Switch

This switch is mounted at the bottom of the Mirror Box Ass'y. It, coupled with the Mirror Motor, detects the state of mirror up.

"Hi" : Mirror down ＊1
"Lo" : Mirror in the up position

＊1 Includes all mirror position other than mirror up position.

O Shutter Charge Switch

This switch, coupled with the Sequence Motor, detects the completion of mirror down and shutter charge.

"Lo" : Sequence Motor has stopped.
"Hi" : Sequence Motor has started.
↓
"Lo" : Mirror down and shutter charge has been completed.

O Aperture Charge Switch

This switch, coupled with the Aperture Charge / Winding Motor, detects the completion of aperture charge (aperture open).

"Lo" : Aperture / Rewind Motor has stopped.
"Hi" : Aperture / Rewind Motor has started.
↓
"Lo" : Aperture charge has been completed.

O End Detect Switch (Reference End)

This switch detects that the Movable Body is positioned at the reference end (end on Mount side).

"Hi" : Not at end (reference end)
"Lo" : Positioned at end (reference end)

O End Detect Switch (Close Distance End)

This switch detects that the Movable Body is positioned at the close distance end (end on Back Cover side).

"Hi" : Not at end (close distance end)
"Lo" : Positioned at end (close distance end)

O Theta Compensation Switch

With the MM Lens mounted on the camera, this switch operates coupled with the theta setting pin of the Lens. It converts the theta compensation value to an electric signal and detects the presence or absence of theta compensation.

θ Compens. Code		Lens Type
LENS1	LENS0	
Lo	Hi	MM Lens without θ compensation
Hi	Lo	MM Lens with θ compensation
Hi	Hi	AE Lens

O Battery Loading Detect Switch

This switch detects the loading of the battery. When the battery is loaded, the battery detect pin is pushed by the battery. Then the switch turns "Lo"→"Hi" and thus it shows that the battery has been set properly.

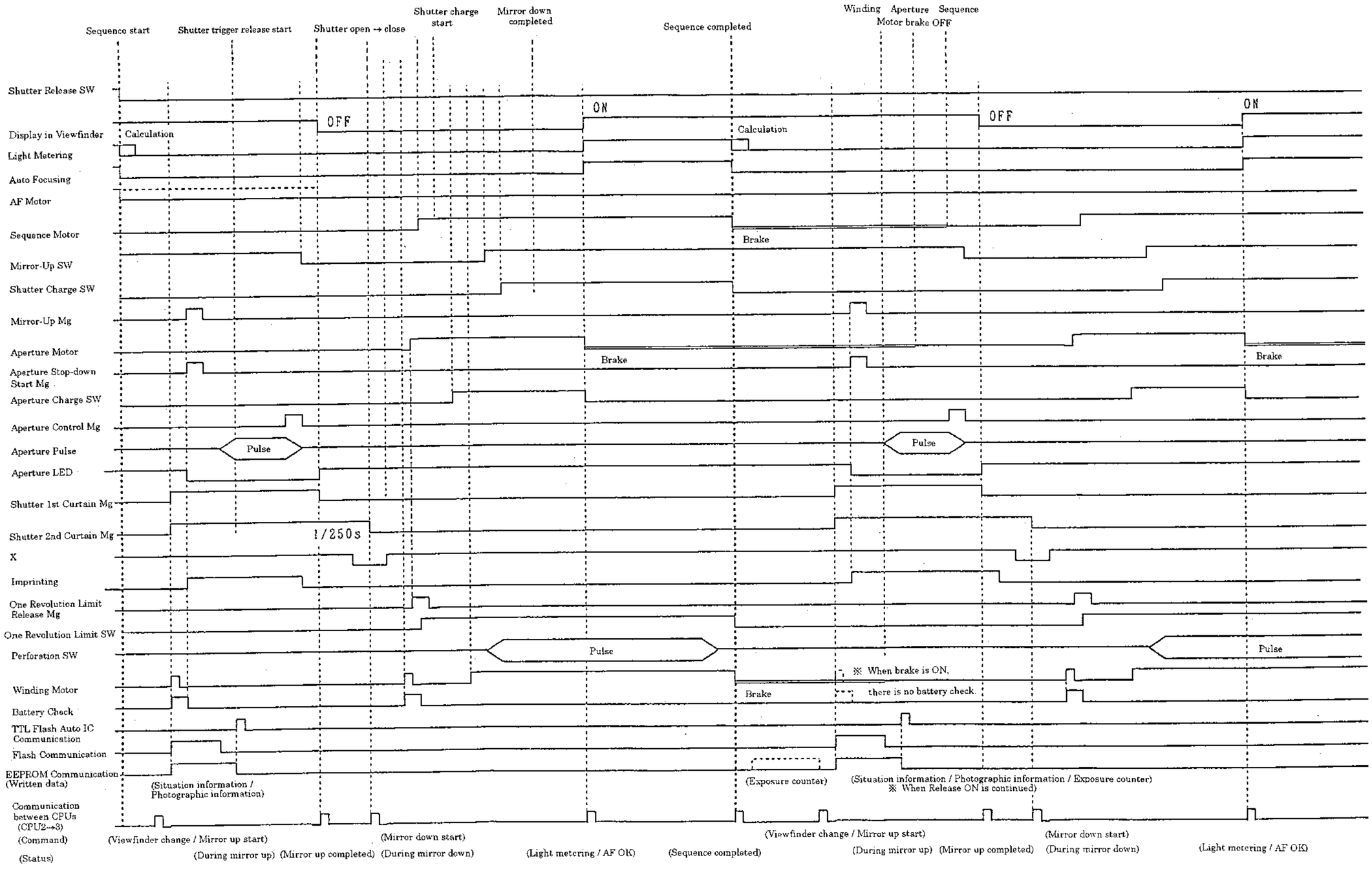
O Open F Value Switch

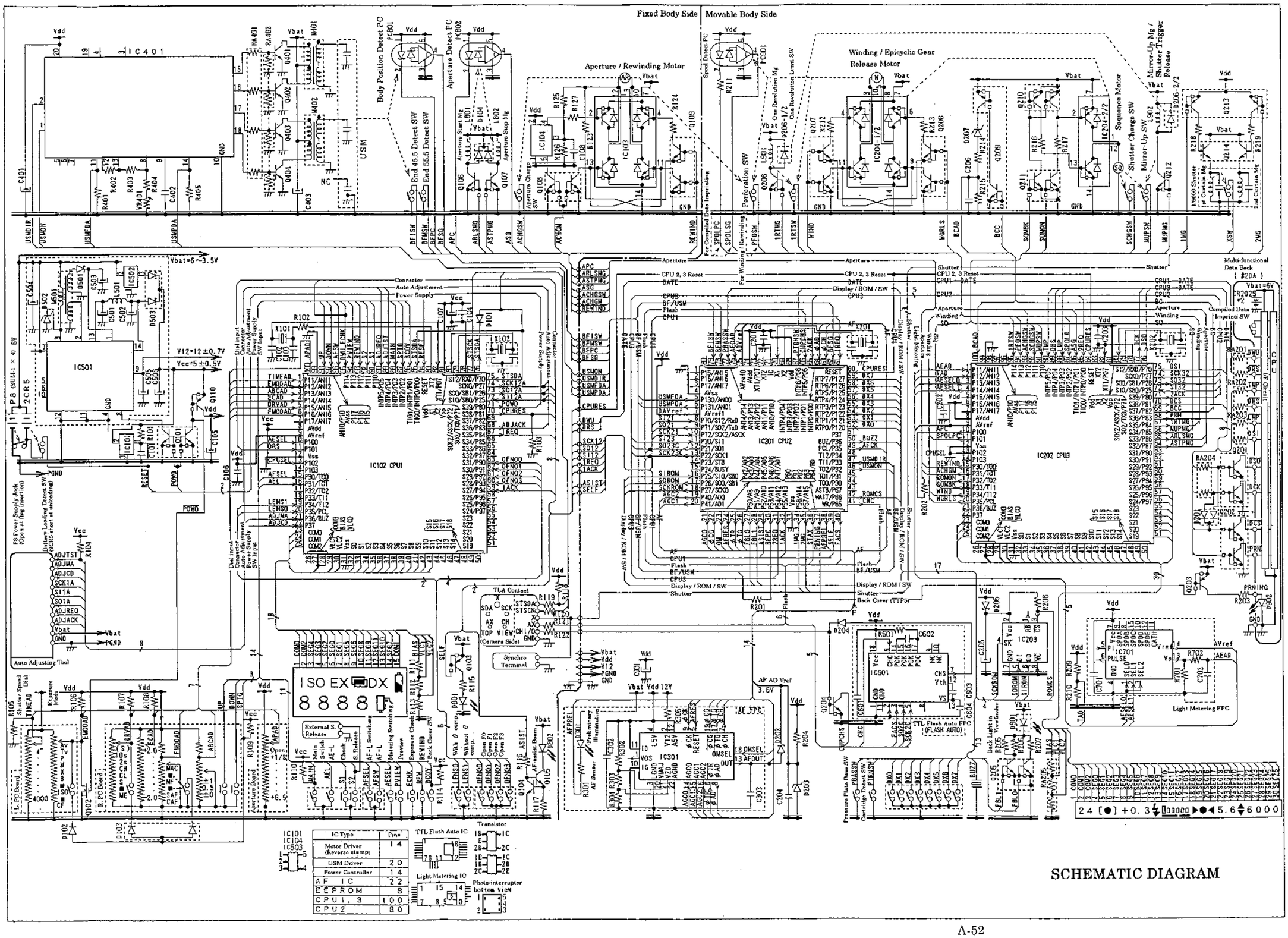
This switch detects aperture values.

O Aperture Code Switch

This switch detects aperture stop-down values obtained by operating the Aperture Ring of the Lens.

TIMING CHART ＊ AF Mode, CH Mode, ISO 100





SCHEMATIC DIAGRAM

B. DISASSEMBLY & REASSEMBLY PROCEDURES

NOTES ON REPAIR

a) This camera, employing the Automatic Back Focusing System, incorporates a body drive mechanism. Take care not to apply unnecessary force to the camera Body, Body Frame or Mount Base ; otherwise, flange back accuracy can be deviated.
b) Never remove the AF Module, Mirror or Sub Mirror from the Mirror Box Ass'y, nor remove the Base Plate from either side of the Mirror Box Ass'y : otherwise, auto focusing accuracy can be deviated.
c) Never disassemble the USM Ass'y (Ultrasonic Motor) ; otherwise, the accuracy of the USM Ass'y can be deviated.

B-1. REMOVAL OF EXTERIOR PARTS

[Chart for Removal of Exterior Parts]

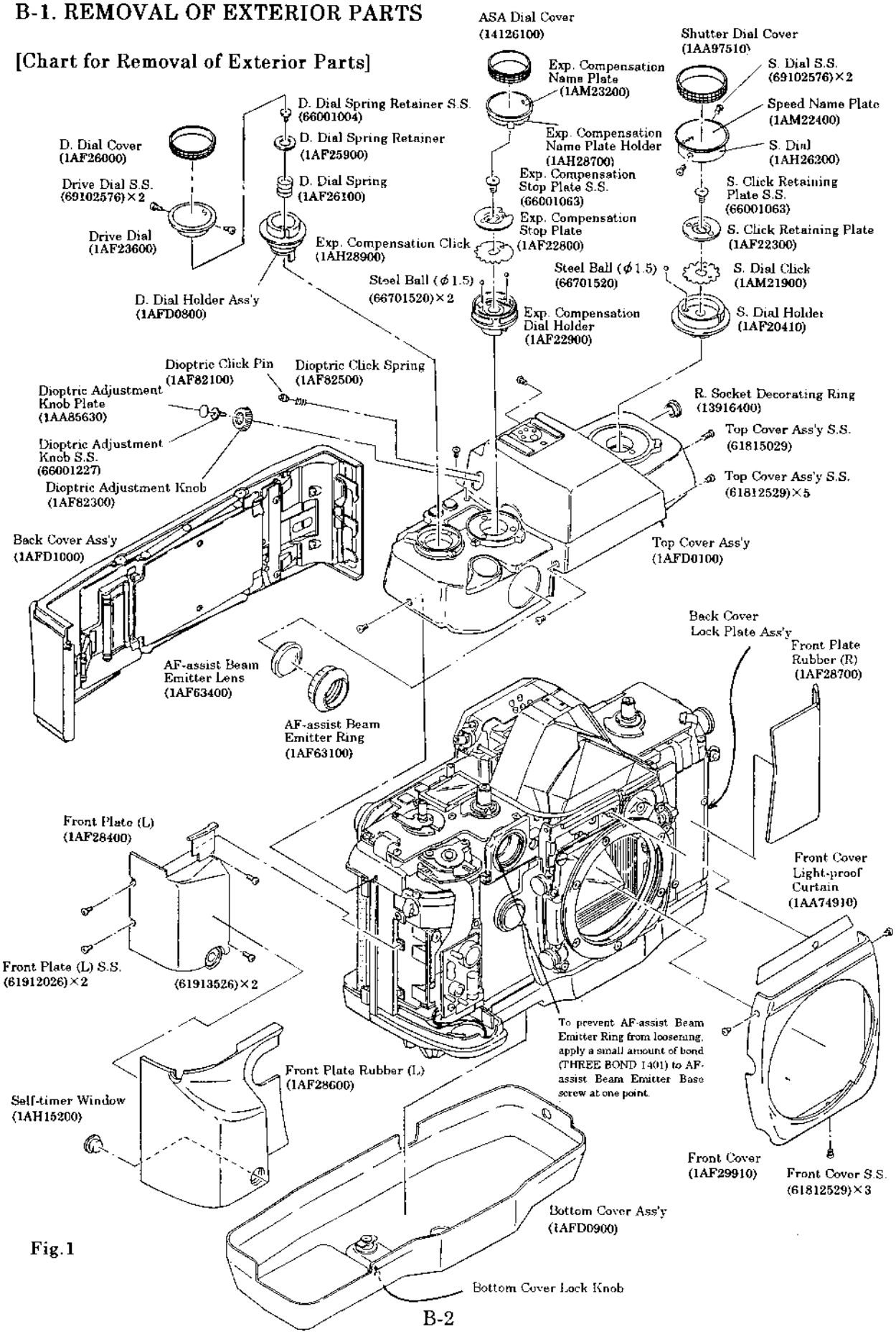


Fig.1

B-1-1. Removal of Bottom Cover Ass'y

(See Fig. 1)

1) Remove the Bottom Cover Ass'y (1AFD0900) by turning the Bottom Cover Lock Knob.
2) Remove the battery (2CR5).

B-1-2. Removal of Back Cover Ass'y

(See Fig. 1)

1) Slide down the Back Cover Release Lever while pressing the lock button of the Back Cover Lock Plate Ass'y and open the Back Cover Ass'y (1AFD1000).
2) Remove the Back Cover Ass'y while pushing down the Back Cover Release Pin.

B-1-3. Removal of Front Cover

(See Fig. 1)

1) Remove the Front Cover Setscrews (61812529)×3 and take off the Front Cover (1AF29910).

B-1-4. Removal of Top Cover Ass'y

(See Fig. 1)

1) Peel off the Dioptric Adjustment Knob Plate (1AF83800) with tweezers or the like.
   Note :
   - The Dioptric Adjustment Knob Plate is fixed with double-stick tape.
2) While holding the Dioptric Adjustment Knob (1AF82300), loosen and remove the Dioptric Adjustment Knob Setscrew (66001227) and take off the Dioptric Adjustment Knob, Dioptric Click Pin (1AF82100) and Dioptric Click Spring (1AF82500).

   Notes :
   - The Dioptric Click Pin and Dioptric Click Spring are very small. Take care not to lose them during repair.
   - To install the Dioptric Click Pin, insert the shaft side of the Dioptric Click Pin into the Dioptric Click Spring. (See Fig. 2)
   - Apply the Grease (HK-9) to the Dioptric Click Pin and Dioptric Click Spring.

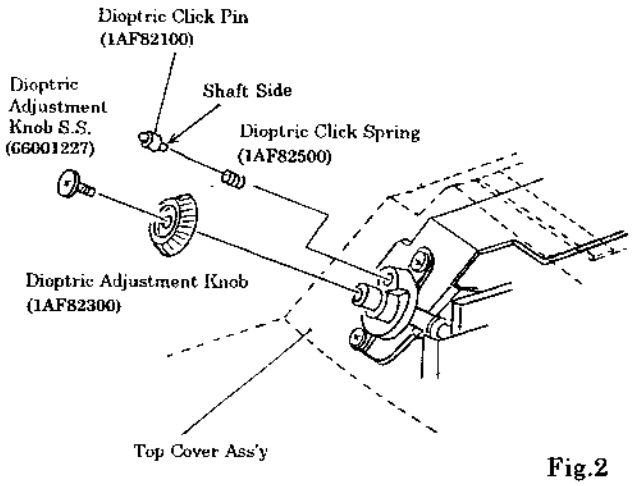


Fig.2

3) Remove the AF-assist Beam Emitter Ring (1AF63100) by turning it with rubber or the like and take off the AF-assist Beam Emitter Lens (1AF63400).

   Notes :
   - To prevent AF-assist Beam Emitter Ring from loosening, a small amount of bond (THREE BOND 1401) has been applied to the AF-assist Beam Emitter Base screw at one point.
   - During repair, take care not to leave your fingerprints on or flaw the AF-assist Beam Emitter Lens.
   - Install the AF-assist Beam Emitter Lens with its convex side positioned in the front.
4) Set the Shutter Dial to "1/4000".
5) Remove the Shutter Dial Cover (1AA97510).

   Note :
   - The Shutter Dial Cover is fixed to the S. Dial with the bond (Cemedine 551).
6) Remove the S. Dial Setscrews (69102576)×2 and take off the S. Dial (1AH26200) W/ Speed Name Plate (1AM22400).

Note :

- The Speed Name Plate is fixed to the S. Dial with the bond (Cemedine 551). In repair, do not remove the Speed Name Plate.

7) Remove the S. Click Retaining Plate Setscrew (66001063) and take off the S. Click Retaining Plate (1AF22300), S. Dial Click (1AM21900) and S. Dial Holder (1AF20410).

Note :

- Take care not to lose the Steel Ball (ϕ1.5) (66701520) that is incorporated in the S. Dial Holder.

8) Set the Drive Dial to "S".
9) Remove the Drive Dial Setscrews (69102576)×2 and take off the Drive Dial (1AF23600).
10) Remove the D. Dial Cover (1AF26000).

Note :

- The D. Dial Cover is fixed to the D. Dial Holder with the bond (Cemedine 551).

11) Remove the D. Dial Spring Retainer Setscrews (66001004) and take off the D. Dial Spring Retainer (1AF25900), D. Dial Spring (1AF26100) and D. Dial Holder Ass'y (1AFD0800).
12) Set the Exposure Compensation Dial to "0".
13) Remove the ASA Dial Cover (14126100).

Note :

- The ASA Dial Cover is fixed to the Exp. Compensation Dial Holder with the bond (Cemedine 551).

14) While disengaging gently the two claws of the Exp. Compensation Name Plate Holder (1AH28700) other than that at the "0" position of the Exp. Compensation Name Plate (1AM23200), remove upward the Exp. Compensation Name Plate Holder (1AH28700) W/ Exp. Compensation Name Plate (1AM23200).

Notes :

- The Exp. Compensation Name Plate Holder and the Exp. Compensation Dial Holder are fixed to each other with the bond (Cemedine 551). Remove the Exp. Compensation Name Plate Holder with care not to break its claws.
- The Exp. Compensation Name Plate is fixed to the Exp. Compensation Name Plate Holder with the bond (Cemedine 551). In repair, do not remove the Exp. Compensation Name Plate.

15) Remove the Exp. Compensation Stop Plate Setscrew (66001063) and take off the Exp. Compensation Stop Plate (1AF22800), Exp. Compensation Click (1AH28900) and Exp. Compensation Dial Holder (1AF22900).

Note :

- Take care not to lose the Steel Balls (ϕ1.5) (66701520)×2 that are incorporated in the Exp. Compensation Dial Holder.

16) Remove the R. Socket Decorating Ring (13916400) by turning it with rubber or the like.
17) Move the Eye-piece Shutter Lever upward, remove the Top Cover Ass'y Setscrews (61812529) ×5, (61815029) and take off the Top Cover Ass'y (1AFD0100).

Notes :

- After removing the Top Cover Ass'y, remove the Exp. Compensation Contact Base Ass'y (1AFC6000)×2 for safety; otherwise, when the Body is turned upside down, the Exp. Compensation Contact Base Ass'y may come off and thus the contact can bend.
- Once the Top Cover Ass'y has been removed, check the flange back.

18) Peel off the Front Cover Light-proof Curtain (1AA74910).

[Note on Handling of Top Cover Ass'y]

* The Top Cover Ass'y incorporates switch contacts, such as Mode Contact, A.B.C. Contact and F Mode Contact. Take care not to bend or deform such contacts.

B-1-5. Removal of Front Plate

(See Fig. 1)

1) Peel off the Front Plate Rubber (R) (1AF28700).
2) Peel off the Front Plate Rubber (L) (1AF28600) and remove the Self-timer Window (1AH15200).

Notes :

- The Front Plate Rubber (L) and Front Plate Rubber (R) are fixed to the Front Plates with double-stick tape.
- Once the Front Plate Rubber (R) and Front Plate Rubber (L) are peeled off, the adhesive strength of the double-stick tapes weakens or they may be torn. Be sure to replace the double-stick tapes with new ones.

3) Remove the Front Plate (L) Setscrews (61913526)×2, (61912026)×2 and take off the Front Plate (L) (1AF28400).
4) Unsolder the Orange and Green lead wires (from Self-timer PC Board) on the Main FPC.
(See Fig. 3)

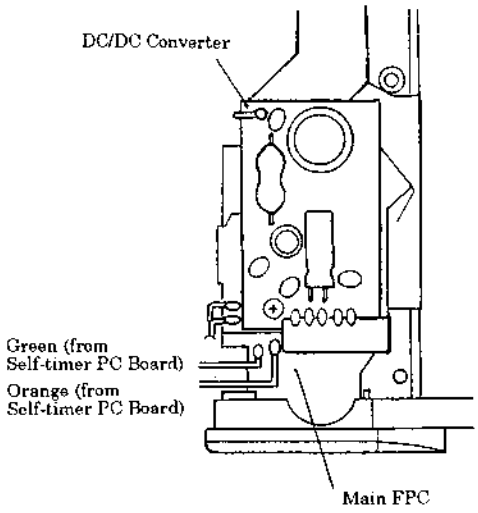


Fig.3

[Sticking of Double-stick Tape to Front Plate Rubbers]

Note :

- Stick the double-stick tapes so that they do not protrude from the Front Plate Rubbers.

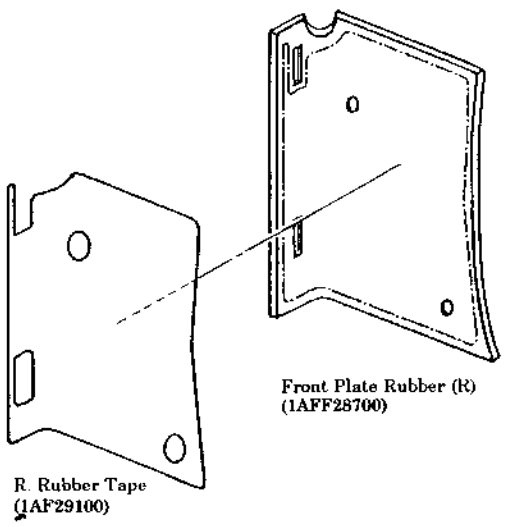


Fig.4

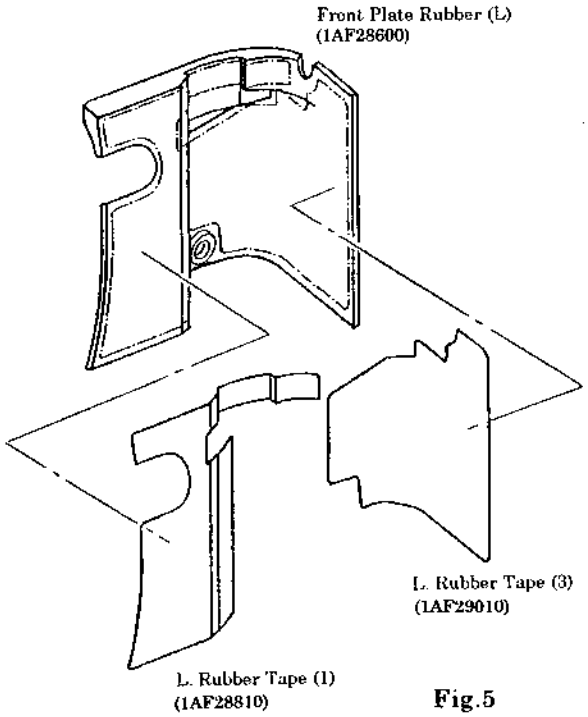


Fig.5

[Notes on Installation of Back Cover Ass'y or Back Cover (D) Ass'y]

* Perform the following checks before closing the Back Cover Ass'y or Back Cover (D) Ass'y :

a) Make sure that the claw of the Release Lock Plate on the Back Cover Ass'y or Back Cover (D) Ass'y is in the release position (lower position).
If the claw of the Release Lock Plate is not in the release position (lower position), move down the claw to the release position. (See Fig. 6)

b) Make sure that the Movable Body is in the front position (close distance position).
If the Movable Body is not in the close distance position, load the battery and operate the camera so as to perform AF initial drive.

c) Make sure that the Lock Claw of the Body is in the lower position.
If the Lock Claw is in the upper position, slide down the Back Cover Release Lever while pressing the Back Cover Lock Button of the Back Cover Lock Plate Ass'y so that it comes in the lower position. (See Fig. 7)

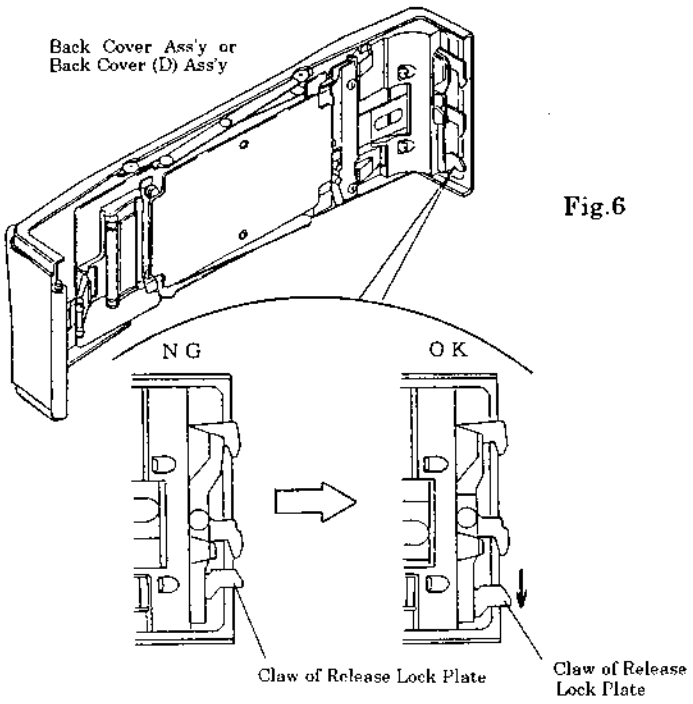


Fig.6

[How to Install Top Cover Ass'y]
(See Fig. 7)

1) Position the slit in the Main Switch area of the Release Unit (1AF52300) as shown in Fig. 11.
2) Set the Main Switch Lever of the Top Cover Ass'y (1AFD0100) to "AEL".
3) Install the Top Cover Ass'y on the Body. In doing so, insert the end of the Main Switch Operation Lever Ass'y (1AFD0300) into the slit in the Main Switch area.
4) Check the operation of the Main Switch Lever by moving it.

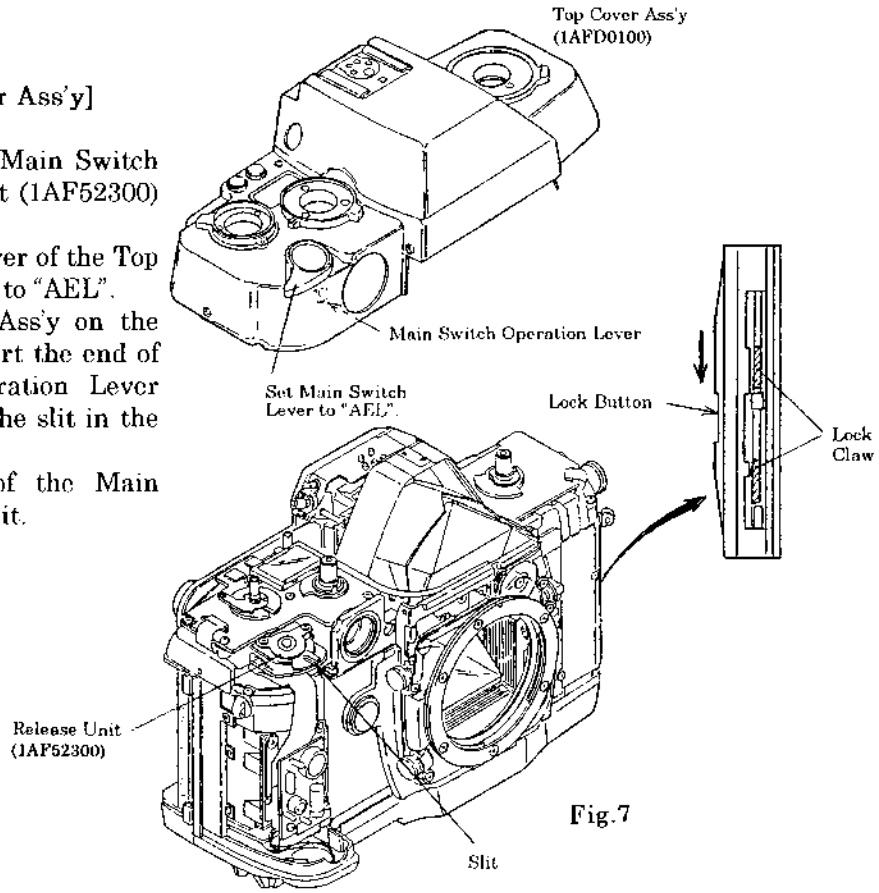


Fig.7

[Assembly Procedure for Shutter Dial]

1) Install the Exp. Compensation Contact Base Ass'y (1AFC6000) in the position as shown in Fig. 8.
2) Apply a small amount of the Grease (HK-9) to the shaft of the S. Dial Base Plate Ass'y.
3) Install the Top Cover Ass'y (1AFD0 100).

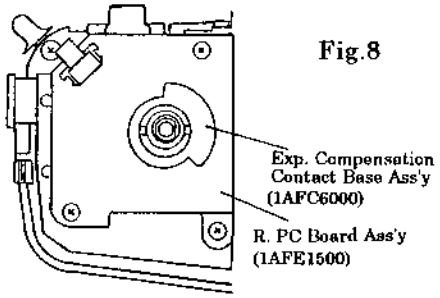


Fig.8

4) Apply the Grease (HK-9) to the hole for the Steel Ball (ϕ1.5) inside the S. Dial Holder (1AF20410).
5) Install the S. Dial Holder in the position as shown in Fig. 9.
6) Put the Steel Ball (ϕ1.5) (66701520) in the hole in the S. Dial Holder.
7) Apply the Grease (HK-9) to the grooves in the S. Dial Click (1AM2 1900) on its dull corner side and install it in the S. Dial Holder. In doing so, install the S. Dial Click in the position as shown in Fig. 10.
8) Install the S. Click Retaining Plate (1AF22300) in the position as shown in Fig. 10 and tighten the S. Click Retaining Plate Setscrew (660010 63).
9) Install the S. Dial W/ Speed Name Plate by fitting the projections of the S. Dial (1AH26200) into the grooves in the S. Dial Holder. In doing so, make certain that the shutter speed is set in the "4000" position.
   Tighten the S. Dial Setscrews (6910 2576)×2.
10) Turn the S. Dial and make certain that it turns smoothly without any catch or rough feel but with clicks to the feel.
11) Apply a small amount of the bond (Cemedine 551) to the periphery of the S. Dial.
    Put the S. Dial Cover (1AA97510) on the periphery of the S. Dial.

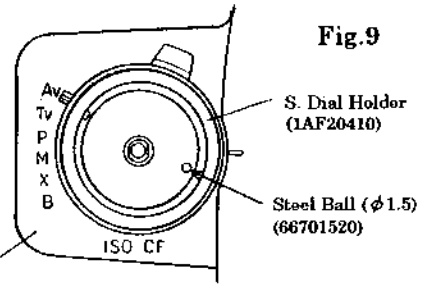


Fig.9

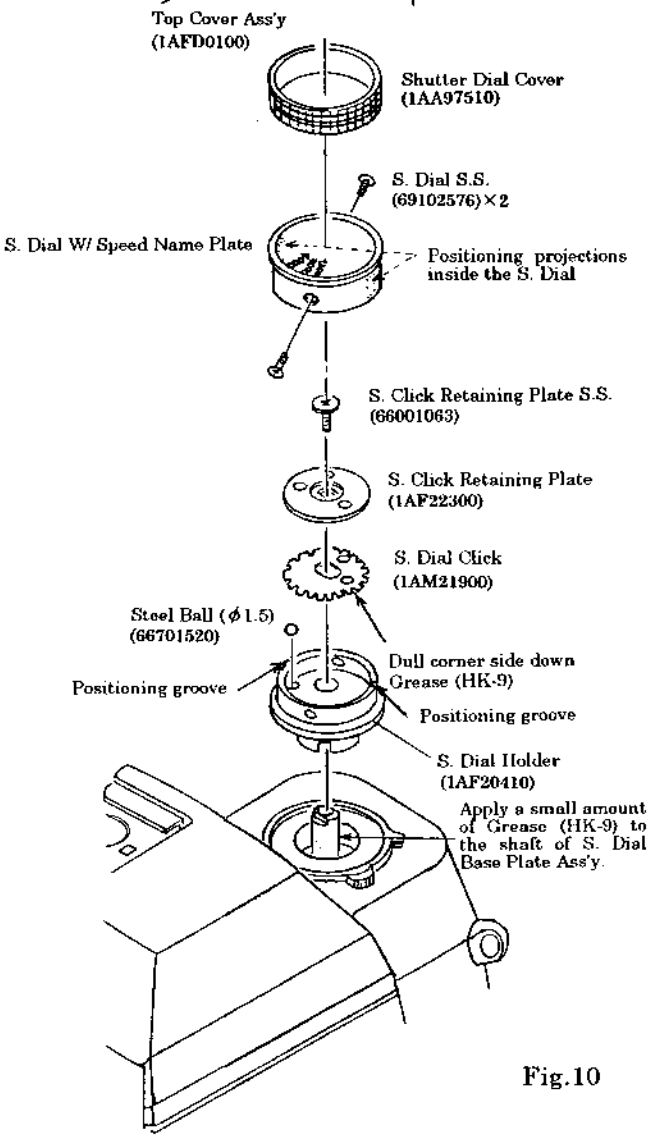

Top Cover Ass'y (1AFD0100)
Shutter Dial Cover (1AA97510)
S. Dial S.S. (69102576)×2
S. Dial W/ Speed Name Plate
Positioning projections inside the S. Dial
S. Click Retaining Plate S.S. (66001063)
S. Click Retaining Plate (1AF22300)
S. Dial Click (1AM21900)
Steel Ball (ϕ1.5) (66701520)
Positioning groove
Dull corner side down Grease (HK-9)
Positioning groove
S. Dial Holder (1AF20410)
Apply a small amount of Grease (HK-9) to the shaft of S. Dial Base Plate Ass'y.

Fig.10

[Assembly Procedure for Exp. Compensation Dial]

1) Install the Exp. Compensation Contact Base Ass'y (1AFC6000) in the position as shown in Fig. 11.
2) Apply a small amount of the Grease (HK-9) to the shaft of the Release Base Plate Ass'y.
3) Install the Top Cover Ass'y (1AFD0100).
4) Apply the Grease (HK-9) to the two holes for the Steel Ball (ϕ1.5) inside the Exp. Compensation Dial Holder (1AF22900).
5) Install the Exp. Compensation Dial Holder in the position as shown in Fig. 12.
6) Put the Steel Balls (ϕ1.5) (66701520) ×2 **in the two holes in the Exp. Compensation Dial Holder.**
7) Apply the Grease (HK-9) to the grooves in the Exp. Compensation Click (1AH28900) on its dull corner side and install it in the Exp. Compensation Dial Holder.
8) Install the Exp. Compensation Stop Plate (1AH22800) so that its projection comes in the square hole in the Exp. Compensation Click. Then tighten the Exp. Compensation Stop Plate Setscrew (66001063).
9) Fit the positioning groove in the Exp. Compensation Dial Holder onto the positioning projection of the Exp. Compensation Name Plate Holder (1AH28700) and install the Exp. Compensation Name Plate Holder W/ Exp. Compensation Name Plate.
   In doing so, lock the three claws of the Exp. Compensation Name Plate Holder to the Exp. Compensation Dial Holder.
10) Turn the Exp. Compensation Dial and make certain that it turns smoothly without any catch or rough feel but with clicks to the feel.
11) Apply the bond (Cemedine 551) to the whole periphery along the gap between the Exp. Compensation Dial Holder and the Exp. Compensation Name Plate Holder.
    (See Fig. 14)
12) Put the ASA Dial Cover (14126100) on the periphery of the Exp. Compensation Dial Holder.

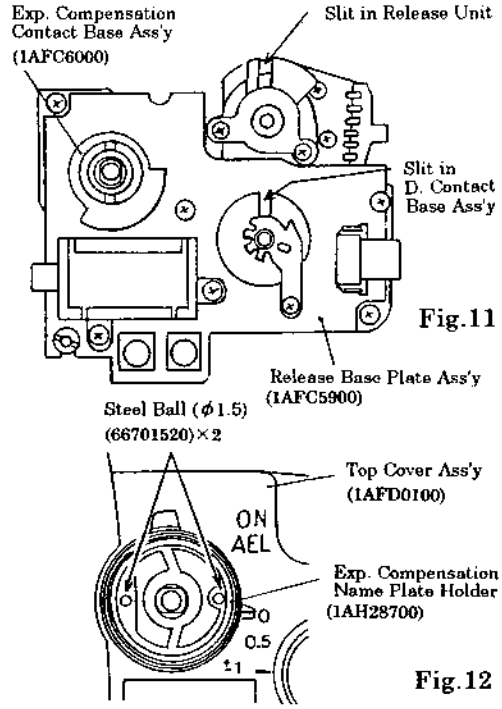


Fig.11

Fig.12

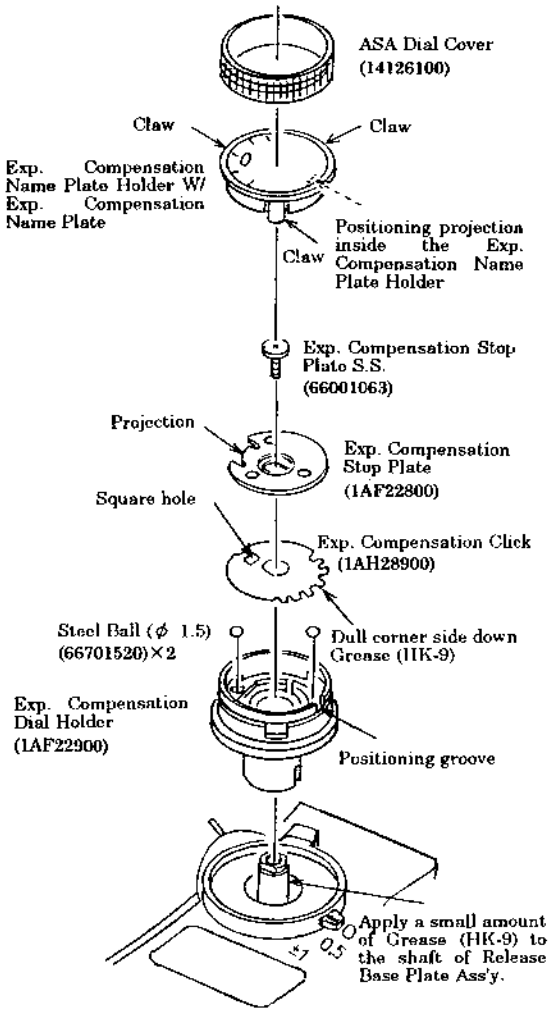
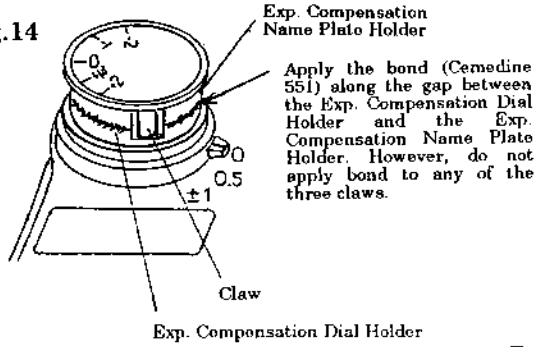

ASA Dial Cover (14126100)
Claw
Claw
Exp. Compensation Name Plate Holder W/ Exp. Compensation Name Plate
Claw
Positioning projection inside the Exp. Compensation Name Plate Holder
Exp. Compensation Stop Plate S.S. (66001063)
Projection
Exp. Compensation Stop Plate (1AF22800)
Square hole
Exp. Compensation Click (1AH28900)
Steel Ball (ϕ 1.5) (66701520)×2
Dull corner side down Grease (HK-9)
Exp. Compensation Dial Holder (1AF22900)
Positioning groove
Apply a small amount of Grease (HK-9) to the shaft of Release Base Plate Ass'y.
0
0.5
±1

Fig.13

Fig.14


Exp. Compensation Name Plate Holder
Apply the bond (Cemedine 551) along the gap between the Exp. Compensation Dial Holder and the Exp. Compensation Name Plate Holder. However, do not apply bond to any of the three claws.
0
0.5
±1
Claw
Exp. Compensation Dial Holder

[Assembly Procedure for Drive Dial]

1) Position the D. Contact Base Ass'y (1AFC 6100) so that its slit is placed in the front. (See Fig. 11)
2) Install the Top Cover Ass'y.
3) Insert the tip of the D. Dial Holder Ass'y (1AFD0800) into the slit in the D. Contact Base Ass'y.
4) Install the D. Dial Spring (1AF26100) and D. Dial Spring Retainer (1AF25900) and tighten the D. Dial Spring Retainer Setscrew (66001004).
5) Install the Drive Dial (1AF23600) on the D. Dial Holder Ass'y by fitting the projection inside the Drive Dial into the notch in the D. Dial Holder Ass'y. Then tighten the Drive Dial Setscrews (6910 2576)×2.
6) Apply the bond (Cemedine 551) to the whole periphery of the Drive Dial.
7) Put the D. Dial Cover (1AF26000) on the periphery of the Drive Dial.

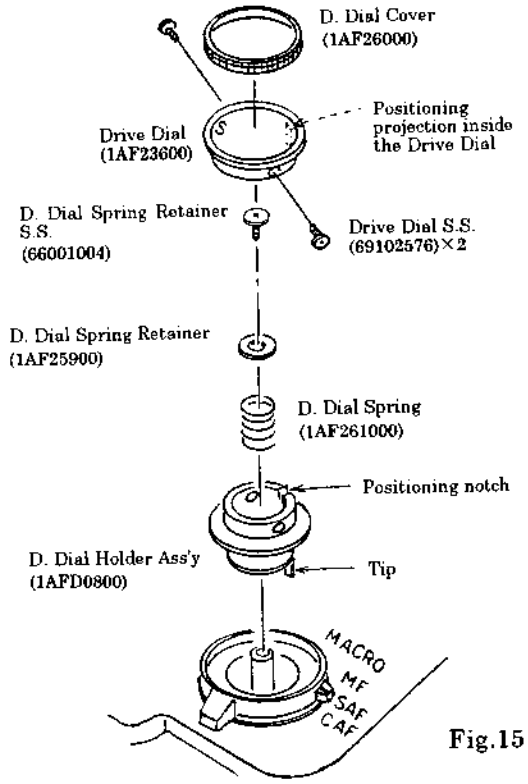


Fig.15

[How to Attach Speed Name Plate]

1) Set the Speed Name Plate (1AM22400) in the S. Dial (1AH26200) by placing the "1000" position of the Name Plate at the screw hole in the Dial.
2) Apply the bond (Cemedine 551) from the back side of the S. Dial.
   Note :
   - Do not apply bond to the Ⓐ or Ⓑ area.

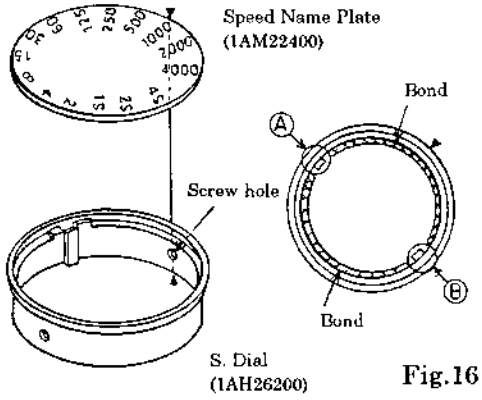


Fig.16

[How to Attach Exp. Compensation Name Plate]

1) Set the Exp. Compensation Name Plate (1AM23200) in the Exp. Compensation Name Plate Holder (1AH28700) by positioning the "0" of the Name Plate at the claw (triangle mark) of the Holder.
2) Apply the bond (Cemedine 551) from the back side of the Exp. Compensation Name Plate Holder.
   Note :
   - Do not apply bond to the Ⓐ, Ⓑ or Ⓒ area.

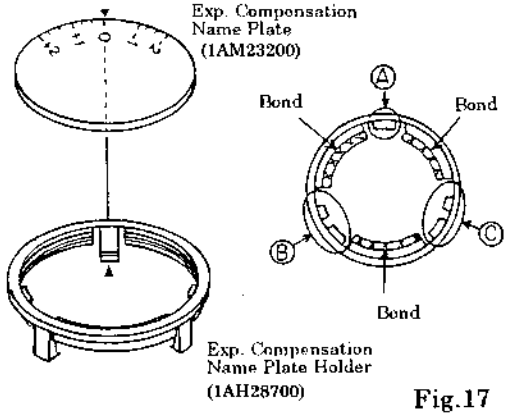


Fig.17

B-2. REMOVAL OF EYE-PIECE COVER ASS'Y

B-2-1. Removal of Eye-piece Cover Ass'y

(See Fig. 18)

1) Unsolder the Brown lead wire (from Synchro terminal) and the Brown lead wire (jumper wire) in the Shoe Spring portion on the Main FPC.
2) Peel off the Shoe Spring portion of the Main FPC.

Note :

- The Main FPC is fixed to the Shoe Base with the FPC Stick Tape (2) (3CK15200)×2.

3) Remove the Eye-piece Cover Ass'y Setscrews (61923026)×2 and take off the Eye-piece Cover Ass'y (1AFC7300).

Note :

- After removing the Eye-piece Cover Ass'y, take care not to bend or deform the AF Lock Contact.

B-3. REMOVAL OF CELL CASE ASS'Y

B-3-1. Removal of Cell Case Ass'y

(See Fig. 18)

1) Unsolder the Black and Red lead wires (from Buzzer) on the Sub FPC.
2) Remove the Cell Case Ass'y Setscrews (61924026)×6 and take off the Cell Case Ass'y (1AFC7200).

[Notes on Tightening of Cell Case Ass'y Setscrews]

* Tighten the Cell Case Ass'y Setscrews in the order as shown below to minimize the change in F.B. (flange back) resulting from the tightening order of the Cell Case Ass'y Setscrews (61924026).

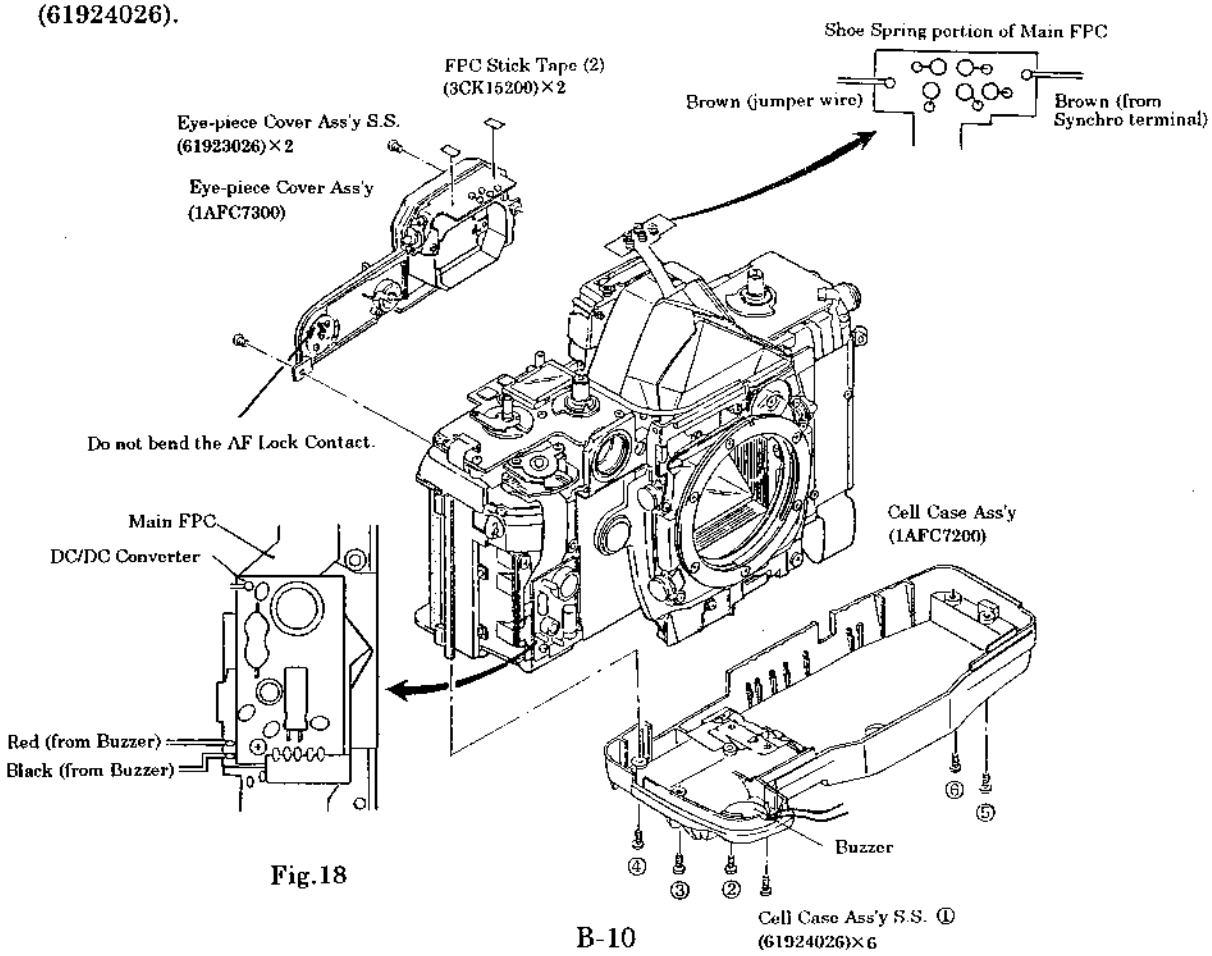


Fig.18

B-4. REMOVAL OF MAIN FPC ASS'Y

[Chart for Removal of Main FPC Ass'y]

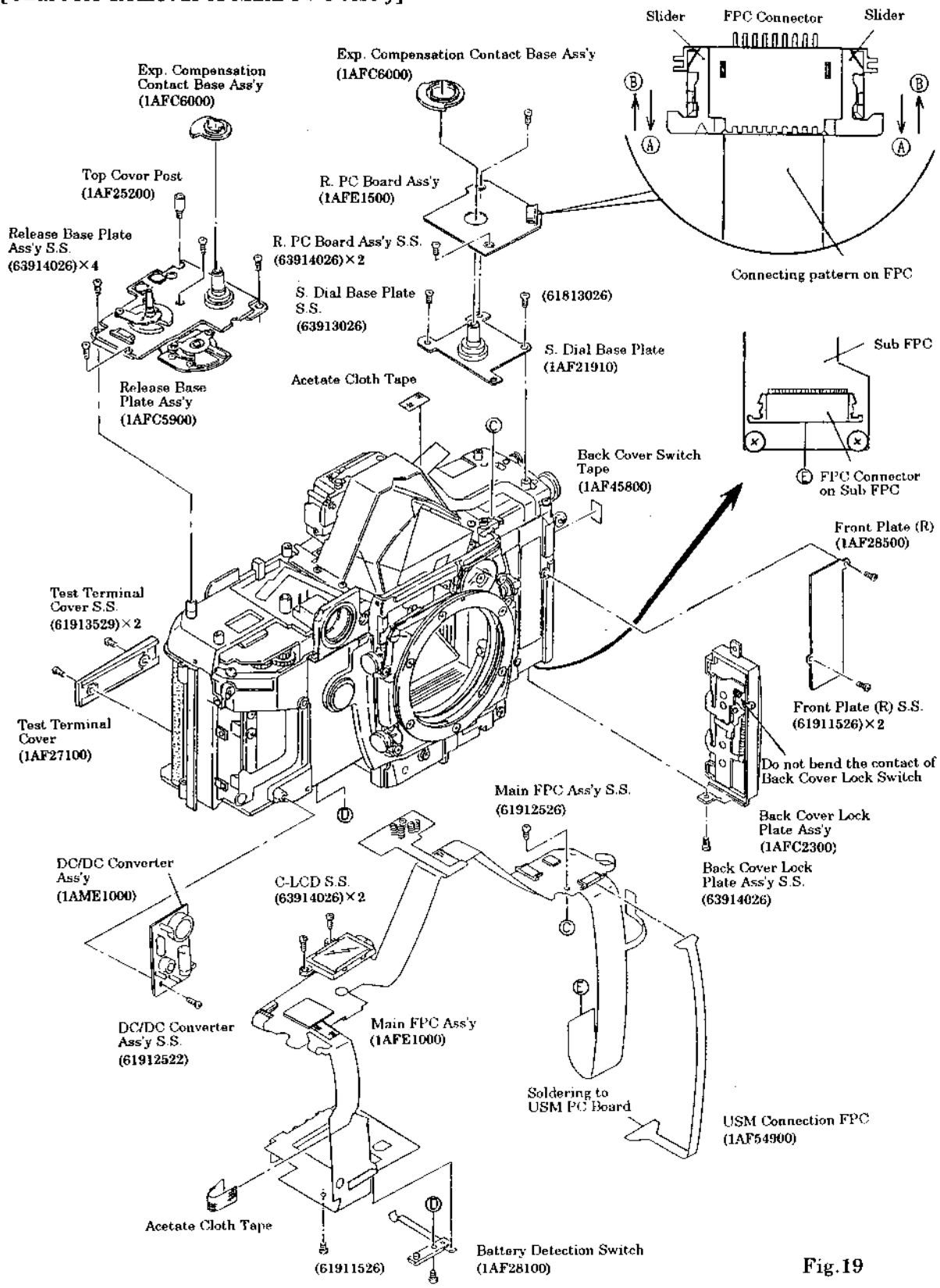

Slider
FPC Connector
Slider
Exp. Compensation Contact Base Ass'y (1AFC6000)
Exp. Compensation Contact Base Ass'y (1AFC6000)
Top Cover Post (1AF25200)
R. PC Board Ass'y (1AFE1500)
Release Base Plate Ass'y S.S. (63914026)×4
R. PC Board Ass'y S.S. (63914026)×2
Connecting pattern on FPC
S. Dial Base Plate S.S. (63913026)
(61813026)
S. Dial Base Plate (1AF21910)
Sub FPC
Release Base Plate Ass'y (1AFC5900)
Acetate Cloth Tape
Back Cover Switch Tape (1AF45800)
FPC Connector on Sub FPC
Front Plate (R) (1AF28500)
Test Terminal Cover S.S. (61913529)×2
Front Plate (R) S.S. (61911526)×2
Test Terminal Cover (1AF27100)
Do not bend the contact of Back Cover Lock Switch
Main FPC Ass'y S.S. (61912526)
Back Cover Lock Plate Ass'y (1AFC2300)
DC/DC Converter Ass'y (1AME1000)
C-LCD S.S. (63914026)×2
Back Cover Lock Plate Ass'y S.S. (63914026)
DC/DC Converter Ass'y S.S. (61912522)
Main FPC Ass'y (1AFE1000)
Soldering to USM PC Board
USM Connection FPC (1AF54900)
Acetate Cloth Tape
(61911526)
Battery Detection Switch (1AF28100)
Battery Detection Switch S.S. (63913026)

Fig.19

* This camera uses an FPC Connector to connect an FPC to a Board or an FPC to another FPC. To disconnect an FPC from the FPC Connector, move the two sliders of the FPC Connector in the direction of the arrow Ⓐ and remove the FPC. (See Fig.19)
  To set an FPC into the FPC Connector, clean the connecting pattern of the FPC with lens cleaning paper with ether alcohol, insert the connecting pattern of the FPC into the FPC Connector and move the two sliders in the direction of the arrow Ⓑ. (See Fig.19)

B-4-1. Removal of S. Dial Base Plate Ass'y & Release Base Plate Ass'y
(See Figs. 19 and 20)

1) Remove the Exp. Compensation Contact Base Ass'y (1AFC6000).
2) Disconnect the connecting pattern of the Main FPC from the FPC Connector on the R. PC Board Ass'y (1AFE1500).
3) Remove the R. PC Board Ass'y Setscrews (63914026)×2 and take off the R. PC Board Ass'y.
4) Remove the S. Dial Base Plate Setscrews (63913026), (61813026) and take off the S. Dial Base Plate (1AFC7000).
5) Remove the Exp. Compensation Contact Base Ass'y (1AFC6000).
6) Disconnect the connecting pattern of the Main FPC from the FPC Connector on the L. PC Board Ass'y (1AFE1300).
7) Unsolder the 6 soldered joints between the Release Unit and the Main FPC.
8) Remove the Top Cover Post (1AF25200).
9) Remove the C-LCD Setscrews (63914026)×2 and take off the C-LCD portion.
10) Remove the Release Base Plate Ass'y Setscrews (63914026)×4 and take off the Release Base Plate Ass'y (1AFC5900).

Note :
- After removing the Exp. Compensation Contact Base Ass'y, take care not to bend or deform the Exp. Compensation Contact.

B-4-2. Removal of DC/DC Converter
(See Figs. 19 and 20)

1) Peel off the Acetate Cloth Tape.
2) Unsolder the 5 soldered joints between the DC/DC Converter and the Main FPC.
3) Unsolder the Black lead wire (from the soldered joint between the Sub FPC and the Light Metering FPC) on the DC/DC Converter.
4) Remove the DC/DC Converter Ass'y Setscrew (61912522) and take off the DC/DC Converter Ass'y (1AME1000).

B-4-3. Removal of Main FPC Ass'y

1) Remove the Front Plate (R) Setscrews (61911526)×2 and take off the Front Plate (R) (1AF28500).
   (Left side of Body) (See Fig. 20)
2) Unsolder the 6 soldered joints between the Sub FPC and the Main FPC.
3) Unsolder the Brown lead wire (from Sub FPC) on the Main FPC.
   (Top right of Body) (See Fig. 20)
4) Unsolder the following 6 lead wires on the Main FPC:
   - Green lead wire (from Release Socket)
   - Red lead wire (from Aperture FPC)
   - Black lead wire (from Aperture PC Board)
   - Black lead wire (from Aperture FPC)
   - Blue lead wire (from Aperture PC Board)
   - Red lead wire (from Aperture PC Board)

Notes :
- In the camera at the early stage of production, a Regulated DC Voltage PC Board is added and installed externally. Therefore, take due care when performing the work 4) above.
  As permanent measures, the circuit in the Main FPC Ass'y will be modified and the Regulated DC Voltage PC Board will be disused.
- When removing the Main FPC Ass'y, do not unsolder the lead wires coming from the Regulated DC Voltage PC Board.

[Chart for Unsoldering on Main FPC Ass'y]

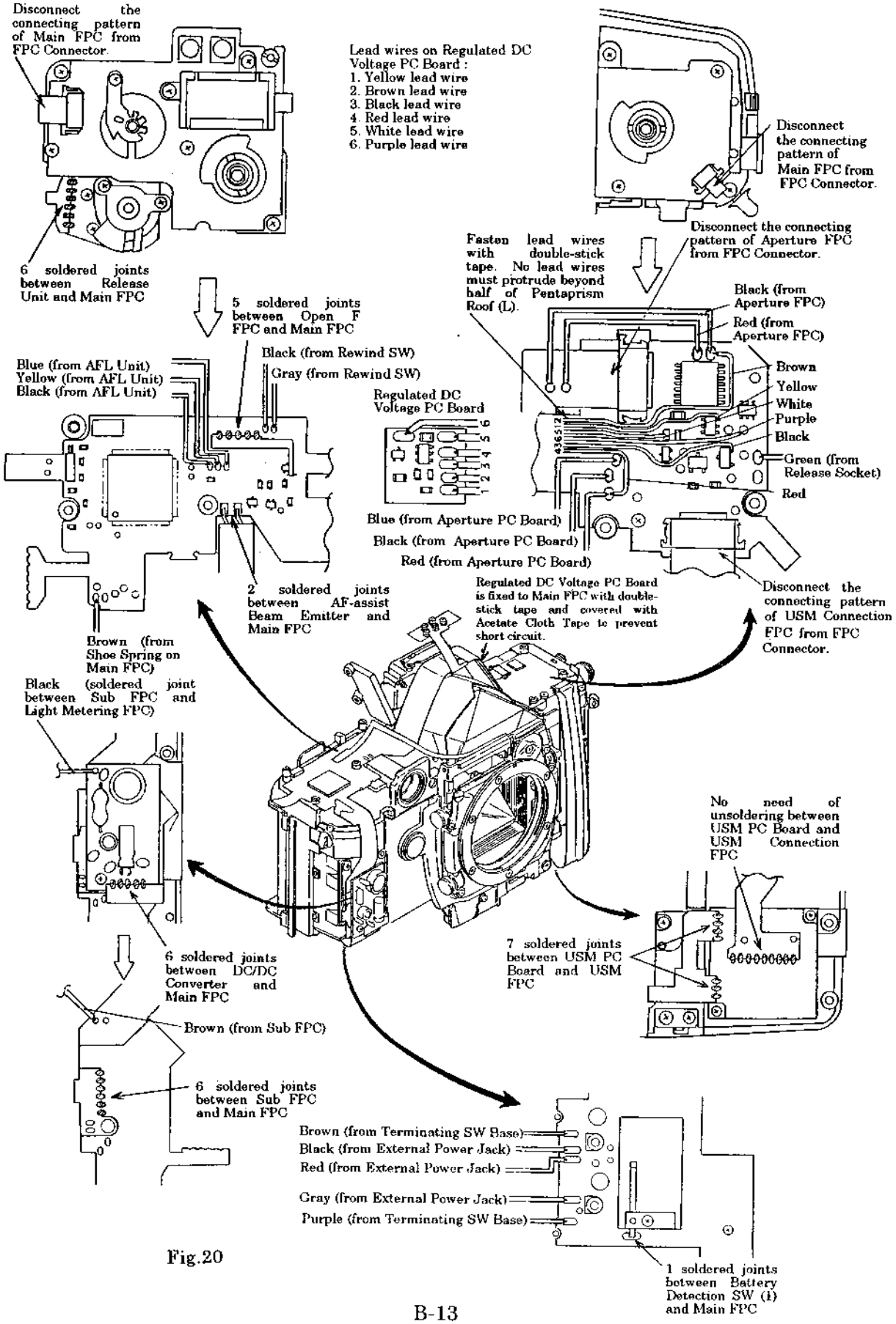

Disconnect the connecting pattern of Main FPC from FPC Connector.
6 soldered joints between Release Unit and Main FPC
Lead wires on Regulated DC Voltage PC Board :
1. Yellow lead wire
2. Brown lead wire
3. Black lead wire
4. Red lead wire
5. White lead wire
6. Purple lead wire
Disconnect the connecting pattern of Main FPC from FPC Connector.
Disconnect the connecting pattern of Aperture FPC from FPC Connector.
Fasten lead wires with double-stick tape. No lead wires must protrude beyond half of Pentaprism Roof (L).
5 soldered joints between Open F FPC and Main FPC
Black (from Aperture FPC)
Red (from Aperture FPC)
Brown
Yellow
White
Purple
Black
Green (from Release Socket)
Red
Blue (from AFL Unit)
Yellow (from AFL Unit)
Black (from AFL Unit)
Black (from Rewind SW)
Gray (from Rewind SW)
Regulated DC Voltage PC Board
Blue (from Aperture PC Board)
Black (from Aperture PC Board)
Red (from Aperture PC Board)
2 soldered joints between AF-assist Beam Emitter and Main FPC
Regulated DC Voltage PC Board is fixed to Main FPC with double-stick tape and covered with Acetate Cloth Tape to prevent short circuit.
Disconnect the connecting pattern of USM Connection FPC from FPC Connector.
Brown (from Shoe Spring on Main FPC)
Black (soldered joint between Sub FPC and Light Metering FPC)
No need of unsoldering between USM PC Board and USM Connection FPC
7 soldered joints between USM PC Board and USM FPC
6 soldered joints between DC/DC Converter and Main FPC
Brown (from Sub FPC)
6 soldered joints between Sub FPC and Main FPC
Brown (from Terminating SW Base)
Black (from External Power Jack)
Red (from External Power Jack)
Gray (from External Power Jack)
Purple (from Terminating SW Base)
1 soldered joints between Battery Detection SW (1) and Main FPC

Fig.20

5) Disconnect the connecting pattern of the USM Connection FPC (1AF54900) from the FPC Connector on the Main FPC.
6) Peel off the Acetate Cloth Tape.
7) Disconnect the connecting pattern of the Aperture FPC from the FPC Connector on the Main FPC.
   (Top left of Body) (See Figs. 19 and 20)
8) Peel off the Acetate Cloth Tape.
9) Unsolder the following 5 lead wires on the Main FPC.
   - Gray lead wire (from Rewind Switch)
   - Black lead wire (from Rewind Switch)
   - Blue lead wire (from AFL Unit)
   - Yellow lead wire (from AFL Unit)
   - Black lead wire (from AFL Unit)
10) Unsolder the 5 soldered joints between the Open F FPC and the Main FPC.
11) Unsolder the 2 soldered joints between the AF-assist Beam Emitter and Main FPC.
    (Bottom of Body) (See Figs. 19 and 20)
12) Unsolder the 1 soldered joint between the Battery Detection Switch (1) and Main FPC.
13) Unsolder the following 5 lead wires on the Main FPC.
   - Brown lead wire (from Terminating Switch Base)
   - Black lead wire (from External Power Jack)
   - Red lead wire (from External Power Jack)
   - Gray lead wire (from External Power Jack)
   - Purple lead wire (from Terminating Switch Base)
14) Remove the Battery Detection Switch Setscrew (63913026) and take off the Battery Detection Switch (1AF28100).
    (See Fig. 20)
15) Disconnect the connecting pattern of the Main FPC from the FPC Connector on the Sub FPC.
    (See Fig. 19)
16) Remove the Test Terminal Cover Setscrews (61913529)×2 and take off the Test Terminal Cover (1AF27100).
17) Remove the Back Cover Lock Plate Ass'y Setscrew (63914026) and take off the Back Cover Lock Plate Ass'y (1AFC2300).
    Note :
   - After removing the Back Cover Lock Plate Ass'y, take care not to bend or deform the Back Cover Lock Switch Contact.
18) Remove the Main FPC Ass'y Setscrews (61912526), (61911526)) and take off the Main FPC Ass'y (1AFE1000).
    Note :
   - The Back Cover Lock Switch pattern area of the Main FPC Ass'y is fixed to the Body with the Back Cover Switch Tape (1AF45800).

[FPC Fastening in DC/DC Converter area]

* Fasten the Main FPC, Sub FPC and lead wires in the DC/DC Converter area by winding Acetate Cloth Tape around them as shown in Fig. 21.

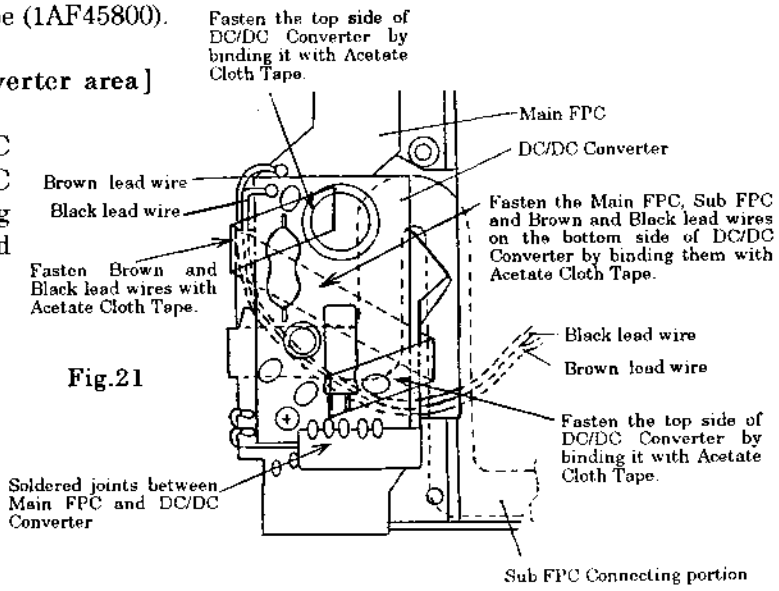

Fasten the top side of DC/DC Converter by binding it with Acetate Cloth Tape.
Main FPC
DC/DC Converter
Brown lead wire
Black lead wire
Fasten the Main FPC, Sub FPC and Brown and Black lead wires on the bottom side of DC/DC Converter by binding them with Acetate Cloth Tape.
Fasten Brown and Black lead wires with Acetate Cloth Tape.
Black lead wire
Brown lead wire
Fasten the top side of DC/DC Converter by binding it with Acetate Cloth Tape.
Soldered joints between Main FPC and DC/DC Converter
Sub FPC Connecting portion

Fig.21

B-5. REMOVAL OF USM ASS'Y

B-5-1. Removal of USM PC Board Ass'y

1) Unsolder the 7 Soldered joints between the USM PC Board and the USM FPC. (See Fig.20)
2) Remove the USM PC Board Ass'y Setscrews (61903026)×2 and take off the USM PC Board Ass'y (1AFE1400). (See Fig.23)

Note :

- There is no need of unsoldering the soldered joints between the USM PC Board and the USM Connection FPC (1AF54900). (See Fig.20)

B-5-2. Removal of USM Ass'y

(See Fig. 22)

1) Remove the Tripod Socket Setscrews (63824526) × 4 and take off the Tripod Socket (1AF10500).
2) Remove the AF Gear Spring Holder Setscrews (61914026)×2 and take off the AF Gear Spring Holder (1AF43900) and AF Gear Spring (1AF43800).
3) Remove the USM Ass'y Setscrew (61924526) and take off the Washer (60122110).
4) Remove the USM Ass'y Setscrew (66001221) and take off the Washer (60132910).
5) Remove the USM Base Plate Screw (1) (1AF43600) and take off the Washer (60132910), USM Ass'y (1AFC5200) and USM Base Plate Collar (1AF51000).

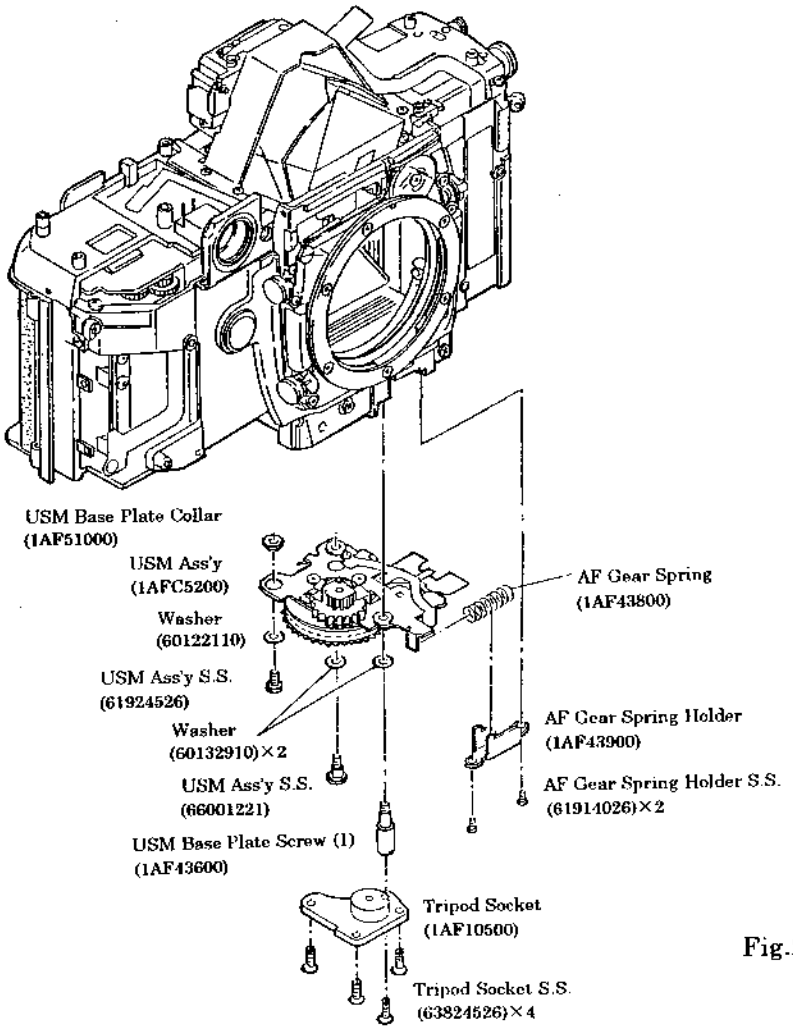


Fig.22

B-6. REMOVAL OF BODY FRAME ASS'Y & MOUNT BASE ASS'Y

Note :

- Once the Body Frame Ass'y and Mount Base Ass'y have been removed, make the flange back adjustment.

[Chart for Removal of Body Frame Ass'y & Mount Base Ass'y]

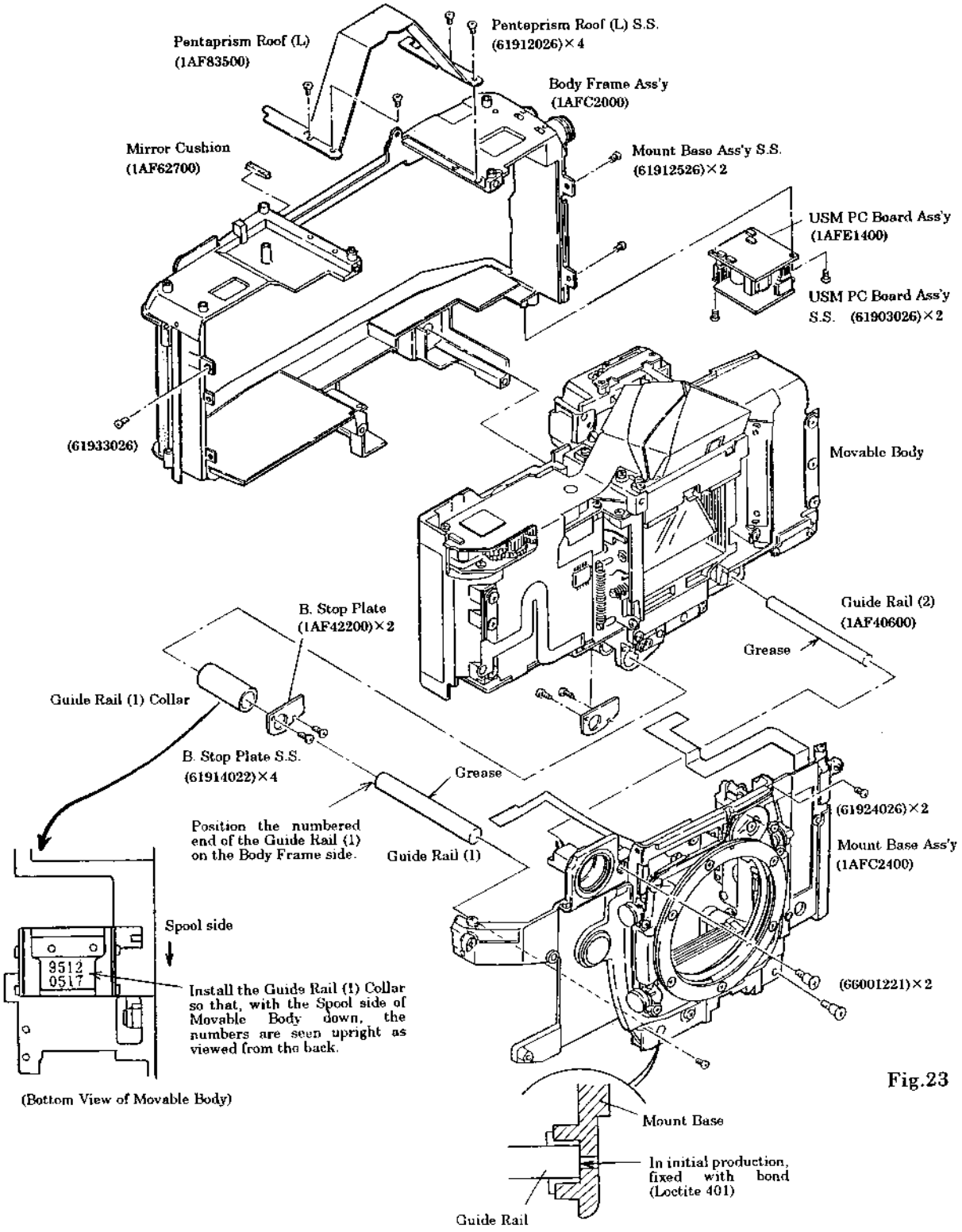


Fig.23

B-6-1. Removal of Body Frame Ass'y & Mount Base Ass'y

(See Fig. 23)

1) Remove the Pentaprism Roof (L) Setscrews (61912026)×4 and take off the Pentaprism Roof (L) (1AF83500).
2) Peel off the Mirror Cushion (1AF62700) and peel off the Body Light Shield Rubber (1AF10910) from the Body Frame.

Notes :

- The Body Light Shield Rubber (1AF10910) is fixed to the Body Frame with the Light Shield Rubber Tape (1) (1AF45600) and the bond (Cemedine 551). (See Fig.24)
- Peel off the Body Light Shield Rubber carefully, since it can be easily broken. Do not use a broken Body Light Shield Rubber, which can cause light leakage.

3) Remove the Mount Base Ass'y Setscrews (61912526) × 2, (61923026), (66001221) × 2, (61924026)×2 and separate the Mount Base Ass'y (1AFC2400), Movable Body and Body Frame Ass'y (1AFC2000) from each other.
4) Remove the Guide Rail (2) (1AF40600) and Guide Rail (1) from the Mount Base Ass'y.
5) Remove the B. Stop Plate Setscrews (61914022)×4 and take off the B. Stop Plates (1AF42200) ×2 and Guide Rail (1) Collar from the Movable Body.

Notes :

- In the camera at the early stage of production, the Guide Rail (1) and Guide Rail (2) are fixed to the Mount Base Ass'y with the bond (Loctite 401). In the camera with the permanent measures, the Guide Rail (1) and Guide Rail (2) are press-fit in the Mount Base Ass'y.
- To ensure the high-accuracy and smooth sliding of the Movable Body, make certain that the Guide Rails and Guide Rail (1) Collar installed are marked with the same number. A Guide Rail (1) and a Guide Rail (1) Collar, in a pair, constitute a Guide Rail Ass'y (1AF41300).
- Clean the Guide Rail (1) and Guide Rail (2) with lens cleaning paper with ether alcohol first and then apply the Grease (LOGENEST LAMBDA A-74). After that, install the relevant parts so that the numbers stamped on the Guide Rail (1) and Guide Rail (1) Collar is positioned as shown in Fig. 23.

[How to Attach Body Light Shield Rubber]

(See Fig. 24)

1) Peel off the Light Shield Rubber Tape (1) and the bond (Cemedine 551) sticking to the Body Frame.
2) Stick the Light Shield Rubber Tape (1) on the Body Frame and then stick the Body Light Shield Rubber on the Body Frame in parallel. In doing so, press the Body Light Shield Rubber so as to prevent it from floating.
3) Apply the bond (Cemedine 551) into the gap between the Body Light Shield Rubber and the Body Frame at three points.
4) Stick the Mirror Cushion on the Body Frame.

[Notes on Installation of Mount Base Ass'y]

* When installing the Mount Base Ass'y on the Movable Body, take care not to catch the FPC or lead wires between the Movable Body and the Mount Base.

[Checking after Installation of Mount Base Ass'y and Body Frame Ass'y]

* After installing the Mount Base Ass'y and Body Frame Ass'y, make certain that the Movable Body can move smoothly forward and backward.

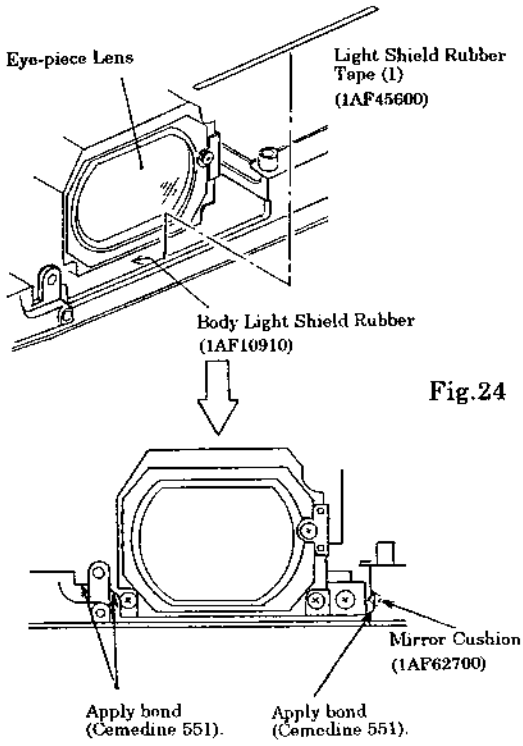

Eye-piece Lens
Light Shield Rubber Tape (1) (1AF45600)
Body Light Shield Rubber (1AF10910)
Mirror Cushion (1AF62700)
Apply bond (Cemedine 551).
Apply bond (Cemedine 551).

Fig.24

B-7. REMOVAL OF SUB FPC ASS'Y & MIRROR BOX ASS'Y

[Chart for Removal of Sub FPC Ass'y & Mirror Box Ass'y]

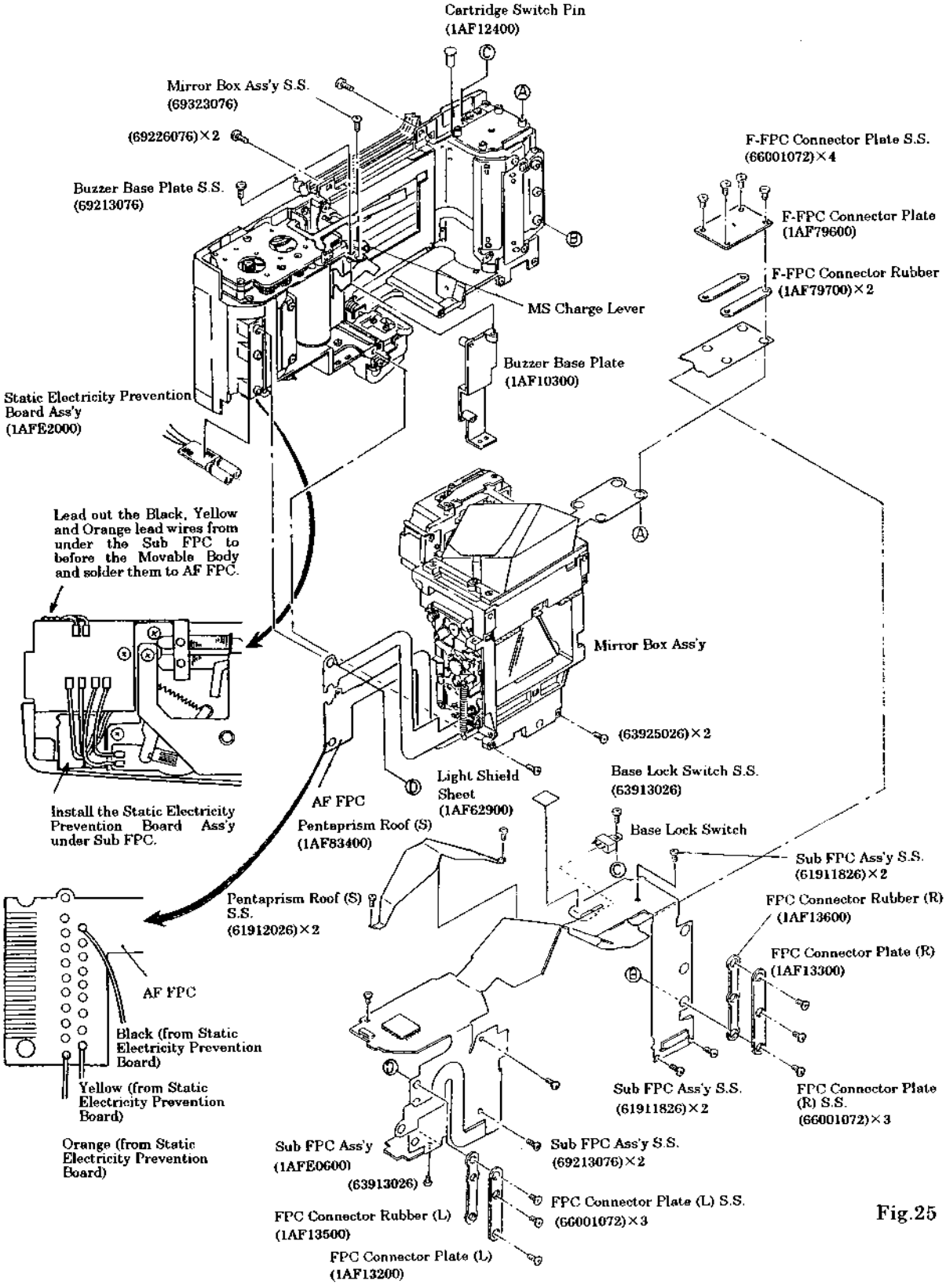


Fig.25

B-7-1. Removal of Sub FPC Ass'y

(See Figs. 25 and 26)

1) Remove the Pentaprism Roof (S) Setscrews (61912026)×2 and take off the Pentaprism Roof (S) (1AF83400).
   (Right side of Pentaprism)
2) Unsolder the 6 Soldered joints between the Light Metering FPC and the Sub FPC. At that time, also unsolder the Black lead wire (from Main FPC).
3) Unsolder the Red and Yellow lead wires (from Finder LCD).
   (Left side of Pentaprism)
4) Unsolder the 6 Soldered joints between the Spool FPC and the Sub FPC.
   (Left side of Movable Body)
5) Unsolder the 5 Soldered joints between the Shutter FPC and the Sub FPC. At that time, also unsolder the Brown lead wire (from Main FPC).
6) Unsolder the following 4 lead wires on the Sub FPC:
   - White lead wire (from Mirror-Up Switch)
   - Gray lead wire (from Mirror-Up Switch)
   - Black lead wire (from Mirror Magnet)
   - Red lead wire (from Mirror Magnet)

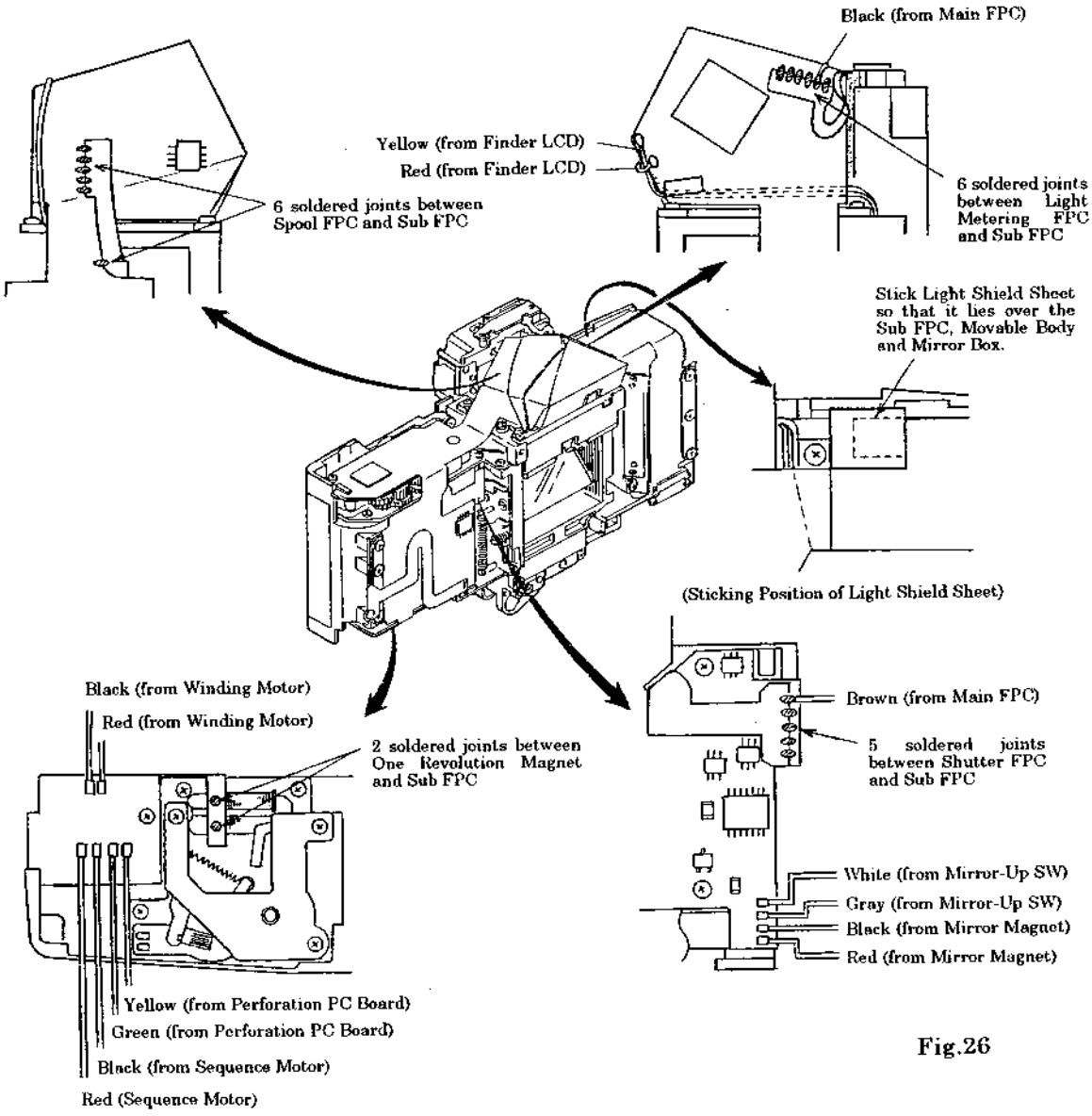

Black (from Main FPC)
Yellow (from Finder LCD)
Red (from Finder LCD)
6 soldered joints between Light Metering FPC and Sub FPC
6 soldered joints between Spool FPC and Sub FPC
Stick Light Shield Sheet so that it lies over the Sub FPC, Movable Body and Mirror Box.
(Sticking Position of Light Shield Sheet)
Black (from Winding Motor)
Red (from Winding Motor)
2 soldered joints between One Revolution Magnet and Sub FPC
Brown (from Main FPC)
5 soldered joints between Shutter FPC and Sub FPC
White (from Mirror-Up SW)
Gray (from Mirror-Up SW)
Black (from Mirror Magnet)
Red (from Mirror Magnet)
Yellow (from Perforation PC Board)
Green (from Perforation PC Board)
Black (from Sequence Motor)
Red (Sequence Motor)

Fig.26

(Bottom of Movable Body) (See Fig. 26)

7) Unsolder the following 6 lead wires on the Sub FPC:
   - Black lead wire (from Sequence Motor)
   - Red lead wire (from Sequence Motor)
   - Yellow lead wire (from Perforation PC Board)
   - Green lead wire (from Perforation PC Board)
   - Red lead wire (from Winding Motor)
   - Black lead wire (from Winding Motor)
8) Unsolder the 2 Soldered joints between the One Revolution Magnet and the Sub FPC. (See Fig. 25)
9) Remove the FPC Connector Plate (R) Setscrews (66001072)×3 and take off the FPC Connector Plate (R) (1AF13300) and FPC Connector Rubber (R) (1AF13600).
10) Remove the FPC Connector Plate (L) Setscrews (66001072)×3 and take off the FPC Connector Plate (L) (1AF13200) and FPC Connector Rubber (L) (1AF13500).
11) Remove the Sub FPC Ass'y Setscrews (61911826)×2 at lower left of the Body.
12) Peel off the Light Shield Sheet (1AF62900).
13) Remove the Sub FPC Ass'y Setscrews (69213076)×2, (61911826)×2.
14) By lifting the top right of the Sub FPC, remove the Base Lock Switch Setscrew (63913026).
    Note :
    - The Base Lock Switch, which is soldered to the Sub FPC, can not be removed singly.
15) Remove the F-FPC Connector Plate Setscrews (66001072)×4 and take off the F-FPC Connector Plate (1AF79600) and F-FPC Connector Rubbers (1AF79700)×2 and then Sub FPC Ass'y (1AFE0600).
16) Remove the Cartridge Switch Pin (1AF12400).
17) Unsolder the Black, Yellow and Orange lead wires (from Static Electricity Prevention Board) on the AF FPC. And remove the Static Electricity Prevention Board Ass'y (1AFE2000).

B-7-2. Removal of Mirror Box Ass'y

(See Fig. 25)

1) Remove the Buzzer Base Plate Setscrew (69213076) and take off the Buzzer Base Plate (1AF10300).
2) Remove the Mirror Box Ass'y Setscrews (69323076), (69226076)×2, (63925026)×2 and take off the Mirror Box Ass'y from the Movable Body.

[Notes on Installation of Mirror Box Ass'y]

(See Fig. 27)

a) Pass the White and Gray lead wires coming from the Mirror-Up Switch through between the Mirror-Up Switch and the AF FPC and between the Mirror Base Plate (L) and the Magnet. Then lead these lead wires out in front of the Mirror Box.
b) When installing the Mirror Box Ass'y in the Movable Body, take care not to catch the FPC or lead wires between the Mirror Box Ass'y and the Movable Body.
c) After installing the Mirror Box Ass'y, make certain that the MS Charge Roller of the Mirror Box Ass'y and the MS Charge Lever of the S. Charge Base Plate Ass'y are positioned as shown in Fig. 27.
d) Tighten the upper screws (69226076)×2 of the Mirror Box Ass'y temporarily first and tighten up them after tightening up the lower screws (63925026)×2. After that, tighten the screw (69323076).

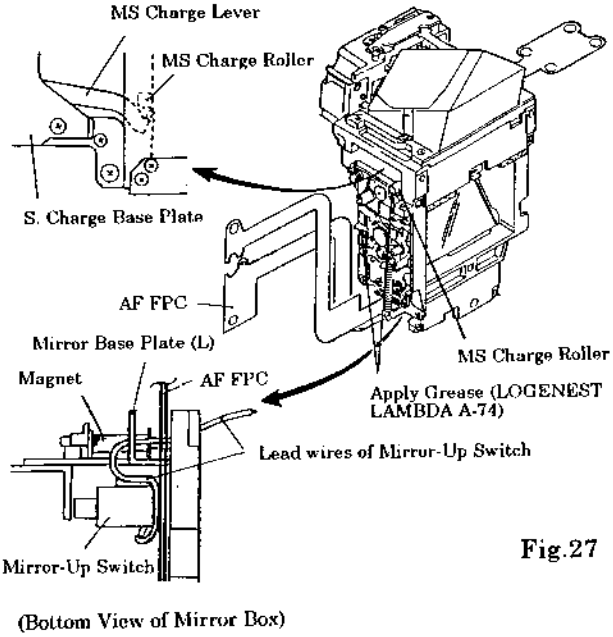


Fig.27

B-8. REMOVAL OF SHUTTER UNIT

B-8-1. Removal of Shutter Unit

(See Fig. 28)

1) Remove the Shutter Unit Setscrews (66001224)×2 and take off the Shutter Unit (1AF30500).
2) Unsolder the 5 Soldered joints between the Shutter Unit and the Shutter FPC (1AF55200).

Note :

- The shutter blades of the Shutter Unit are made with precision. Never touch the blades with your finger, nor push them with any tool.

[Note on Installation of Shutter Unit]

a) When installing the Shutter Unit on the Movable Body, the Shutter Base Plate may be caught by the end of the DX FPC and can break the DX FPC. To prevent such trouble, install the Shutter Unit by the following procedure.

[Installation Procedure for Shutter Unit]

1) Before installing the Shutter Unit on the Movable Body, put polyester film (or the equivalent) on the DX FPC to cover the DX FPC.
2) Install the Shutter Unit and tighten the two Shutter Unit Setscrews.
3) Pull out the polyester film.

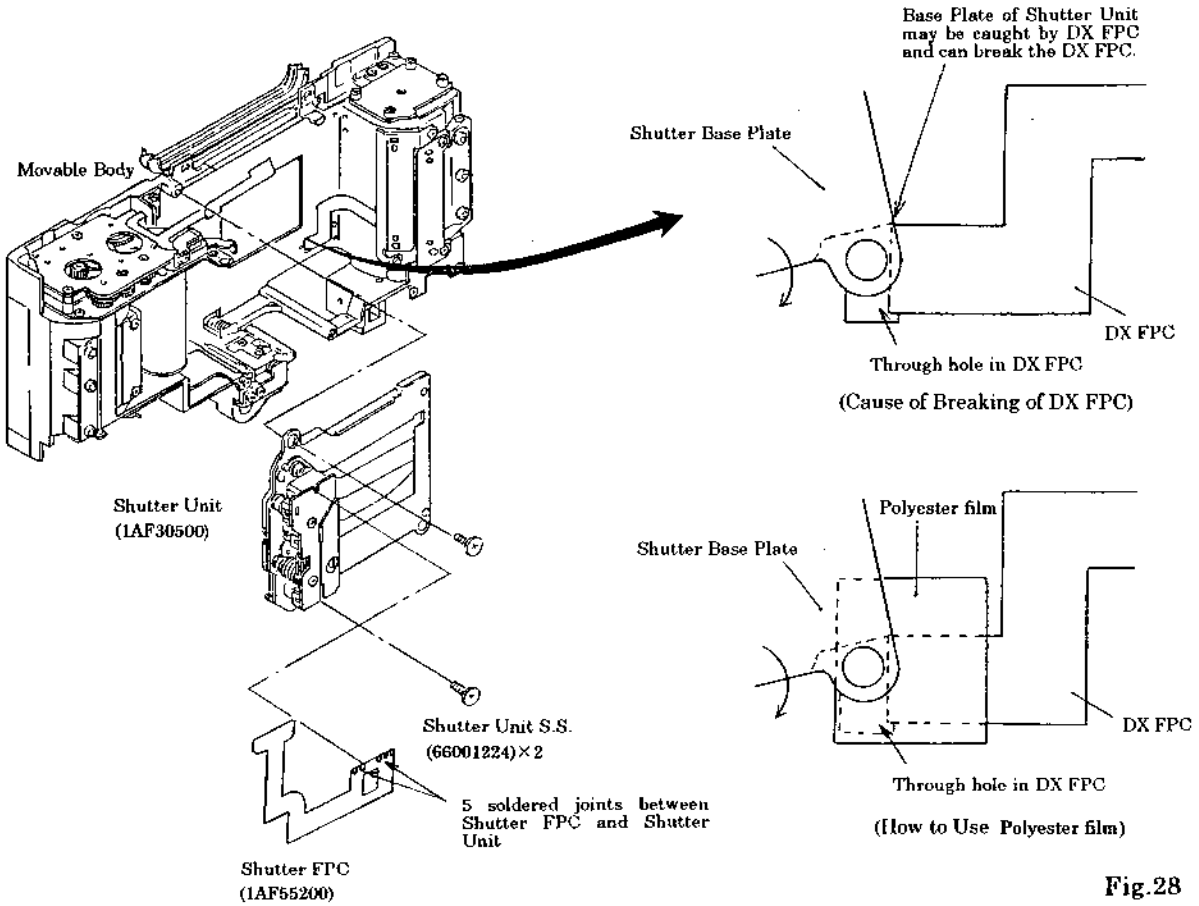


Fig.28

B-9. REMOVAL OF WINDING AND REWINDING MECHANISM

[Chart for Removal of Winding and Rewinding Mechanism]

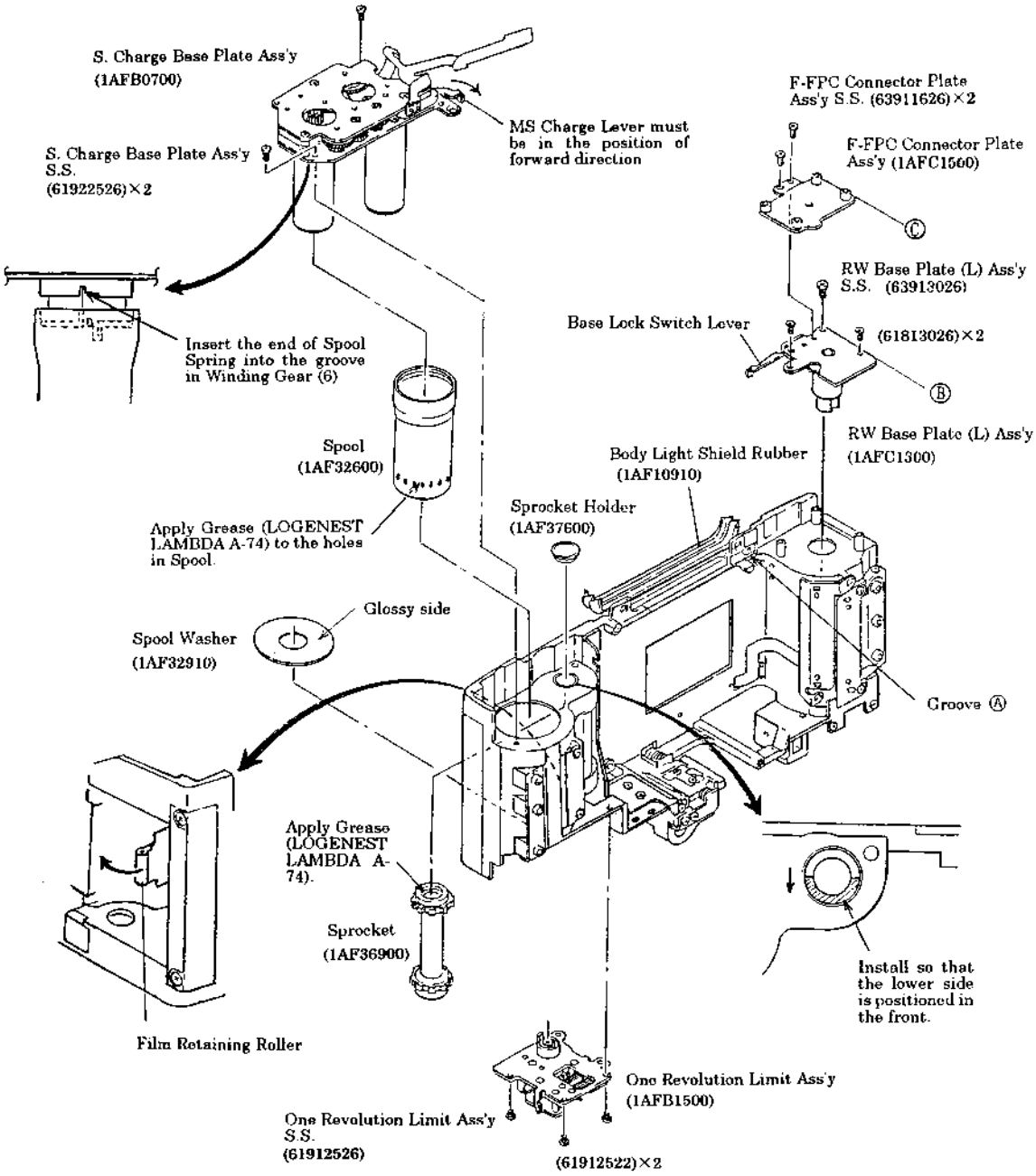


Fig.29

B-9-1. Removal of RW Base Plate (L) Ass'y

(See Fig. 29)

1) Remove the F-FPC Connector Plate Ass'y Setscrews (63911626)×2 and take off the F-FPC Connector Plate Ass'y (1AFC1500).
2) Remove the RW Base Plate (L) Ass'y Setscrews (61813026)×2, (63913026) and take off the RW Base Plate (L) Ass'y (1AFC1300).

B-9-2. Removal of One Revolution Limit Ass'y

(See Fig. 29)

1) Remove the One Revolution Limit Ass'y Setscrews (61912522)×2, (61912526) and take off the One Revolution Limit Ass'y (1AFB1500).

B-9-3. Removal of S. Charge Base Plate Ass'y

(See Fig. 29)

1) Remove the S. Charge Base Plate Ass'y Setscrews (61922526)×2 and take off the S. Charge Base Plate Ass'y (1AFB0700).
2) Remove the Spool (1AF32630) and Spool Washer (1AF32900).
3) Remove the Sprocket Holder (1AF37600) and take off the Sprocket (1AF36900).

[Notes on Installation of RW Base Plate (L) Ass'y]

(See Fig. 29)

a) Install the RW Base Plate (L) Ass'y (1AFC1300) while inserting its Base Lock Switch Lever into the groove Ⓐ in the Body.
b) Install the F-FPC Connector Plate Ass'y (1AFC1500) so that the end Ⓑ of the RW Base Plate (L) Ass'y is in parallel with the end Ⓒ of the F-FPC Connector Plate.

[Installation Procedure for S. Charge Base Plate Ass'y]

(See Fig. 29)

1) Apply the Grease (LOGENEST LAMBDA A-74) to the indent at the top of the Sprocket (1AF36900) and install the Sprocket in the Movable Body. After that, install the Sprocket Holder (1AF37600).
2) Install the Spool Washer (1AF32900) in the Movable Body with the glossy side of the Spool Washer up.
3) Apply the Grease (LOGENEST LAMBDA A-74) to the holes in the lower area of the Spool (1AF32630). Then install the Spool on the Shutter Base Plate Ass'y in such a way that the end of the Spool Spring (1AF32700) in the Spool is placed in the groove in the Winding Gear (6) of the S. Charge Base Plate Ass'y.
4) While pressing the Film Retaining Roller in the direction of the arrow, install the S. Charge Base Plate W/ Spool in the Movable Body.

   Notes :

   - Install the Sprocket Holder so that its lower side is positioned in the front.
   - When installing the S. Charge Base Plate Ass'y on the Movable Body, position the MS Charge Lever in the front.
   - By pressing the S. Charge Base Plate Ass'y from above, make certain that the Spool has an up and down play. Also make certain that the Spool rotates smoothly.
5) Tighten the S. Charge Base Plate Ass'y Setscrews (61922526)×2.
   Then again make certain that the Spool has a up and down play and rotates smoothly.
6) While engaging the Sprocket Coupler of the One Revolution Limit Ass'y (1AFB1500) with the bottom indent inside the Sprocket, install the One Revolution Limit Ass'y on the Movable Body. Then tighten the One Revolution Limit Ass'y Setscrews (61912526), (61912522)×2.

[Notes on Tightening of S. Charge Base Plate Ass'y Setscrews]

* After installing the Mirror Box Ass'y, the Mirror Box Ass'y may interfere with the Movable Body depending on the tightening of the S. Charge Base Plate Setscrews and resultantly the Guide Rail can be strained. In such a case, correct the tightening of the Setscrews by the following procedure:

1) Loosen the Mirror Box Ass'y Setscrew (69324076)① and S. Charge Base Plate Ass'y Setscrews (61922526)×2 ②, ③.
2) Tighten the Mirror Box Ass'y Setscrew (69324076)①.
3) Tighten the S. Charge Base Plate Ass'y Setscrews ② and ③ in the named order.

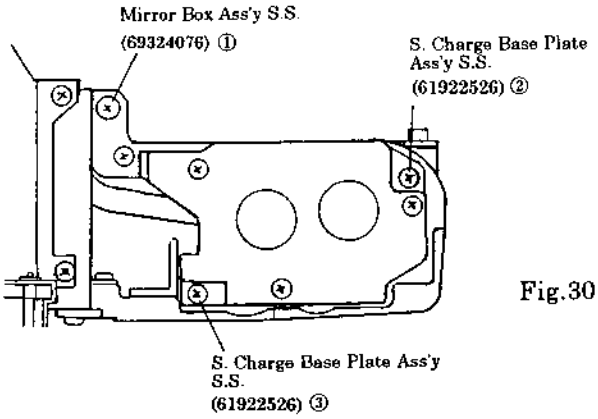


Fig.30

[Installation of Spool Rubber & Spool Spring]

1) Put the Spool Rubber (1AF32800) on the Spool (1AF32600).
2) Install the Spool Spring by fitting the end of the Spool Spring (1AF32700) in the indent inside the Spool.

Notes :

- The Spool Rubber must be free from floating.
- With the burr side of the Spool Spring up, the end face of the Spool Spring must be fit correctly in parallel with the indent inside the Spool.

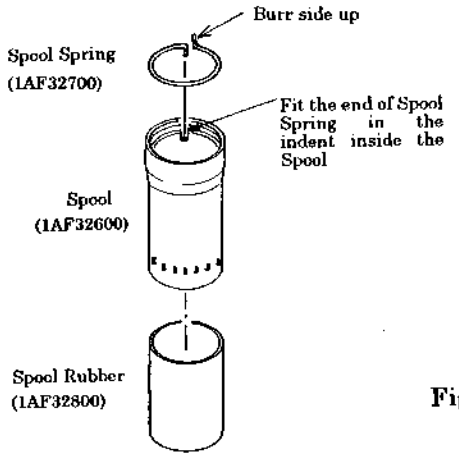


Fig.31

[How to Attach Body Light Shield Rubber]

Note :

- Peel off the Body Light Shield Rubber carefully, since it can be easily broken. Do not use a broken Body Light Shield Rubber, which can cause light leakage.

1) Peel off the Light Shield Rubber Tape (1) (1AF45600) and the bond (Cemedine 551) sticking to the Movable Body.
2) Stick the Light Shield Rubber Tape (1) on the Movable Body and then stick the Body Light Shield Rubber on the Movable Body in parallel. In doing so, press the Body Light Shield Rubber from above so as to prevent it from floating.
3) Fix the Body Light Shield Rubber by applying the bond (Cemedine 551) to both ends of the Body Light Shield Rubber.

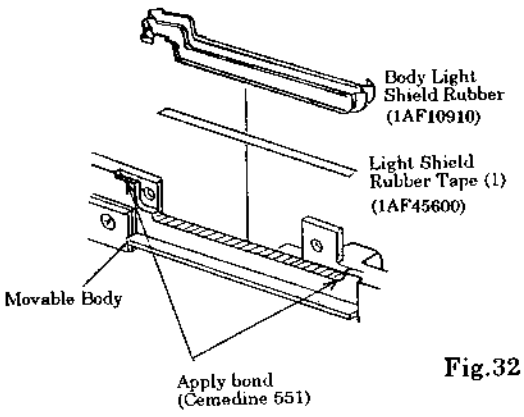


Fig.32

B-10. REMOVAL OF OTHER PARTS

B-10-1. Removal of DX Ass'y

(See Fig. 33)

1) Remove the Contact Cover Setscrews (66001167) × 3 and take off the Contact Cover (1AF10800) and Contact FPC Spacer (1AF47800).
2) Remove the DX Ass'y Setscrews (61913026) × 4 and take off the DX Ass'y (1AFB0400).

[Notes on Installation of DX Ass'y]

a) Install the DX Ass'y while inserting the end of the DX FPC into the hole in the Movable Body.
b) Wipe the pattern on the DX FPC with lens cleaning paper with ether alcohol.
c) Tighten the Contact Cover Setscrews ×3 while pushing the Contact Cover upward.

B-10-2. Removal of Film Holding Plate Ass'y

(See Fig. 33)

1) Remove the Film Holding Plate Ass'y Setscrews (63913026) × 2 and take off the Film Holding Plate Ass'y (1AFB0100).

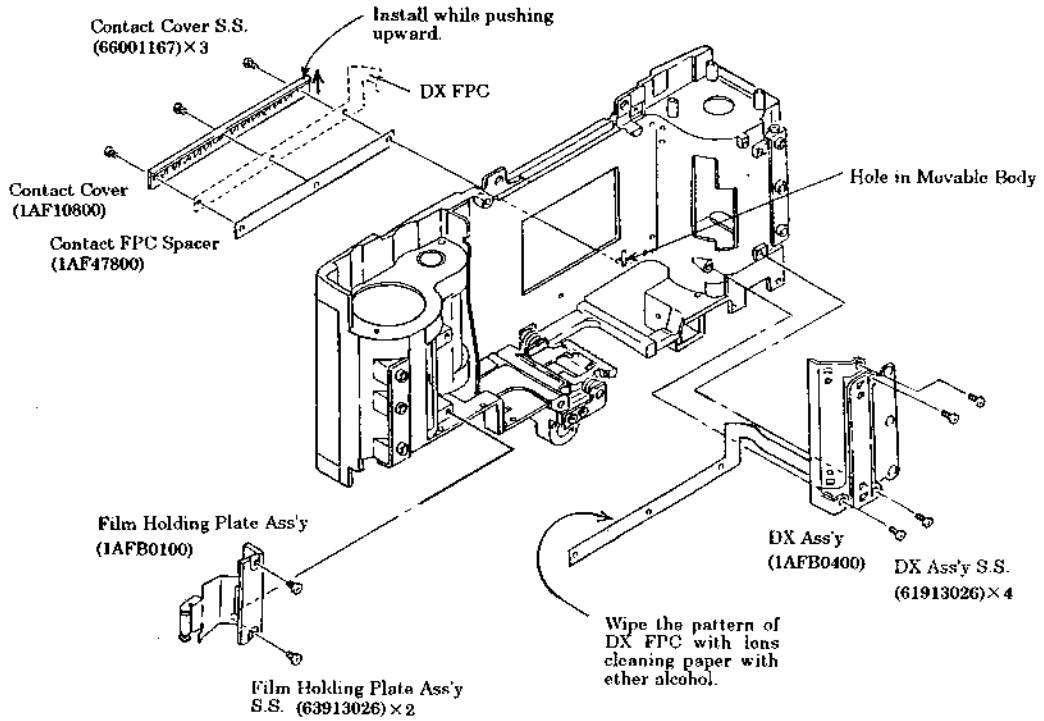


Fig.33

B-10-3. Removal of Other Parts

(See Fig. 34)

1) Remove the Guide Rail (2) Holder Setscrews (61925026)×2, (61924026)×2 and take off the Guide Rail (2) Holder (1AF42400).
2) Remove the Guide Rail (2) Holder Bases (1AF42300)×2 from the Guide Rail (2) Holder.
3) Remove the Rack Spring Holding Plate Setscrews (61924026)×2 and take off the Rack Spring Holding Plate (1AF42500) and Rack Spring (F) (1AF41700).
4) Remove the Rack Guide Plate Setscrews (61913026)×2 and take off the Rack Guide Plate (1AF42100) and AF Drive Rack (1AF41500).
5) Remove the Rack Base Plate Ass'y Setscrews (61813526)×2, (61913526) and take off the Rack Base Plate Ass'y (1AFB2400), Rack Spring Shaft (1AF41900) and Rack Spring (R) (1AF41800).
   Note :
   - Apply Grease (LOGENEST LAMBDA A-74) to the specified positions.
6) Remove the Cartridge Lifter Setscrews (61912022)×2 and take off the Cartridge Lifter (1AF11000).
7) Remove the Body Reinforcement Plate Setscrews (63913026)×2, (63911826)×4 and take off the Body Reinforcement Plate (1AF11600).

[Note on Installation of Cartridge Lifter]

- Tighten the Cartridge Lifter Setscrews while pushing the Cartridge Lifter toward inside (in the direction of the arrow).

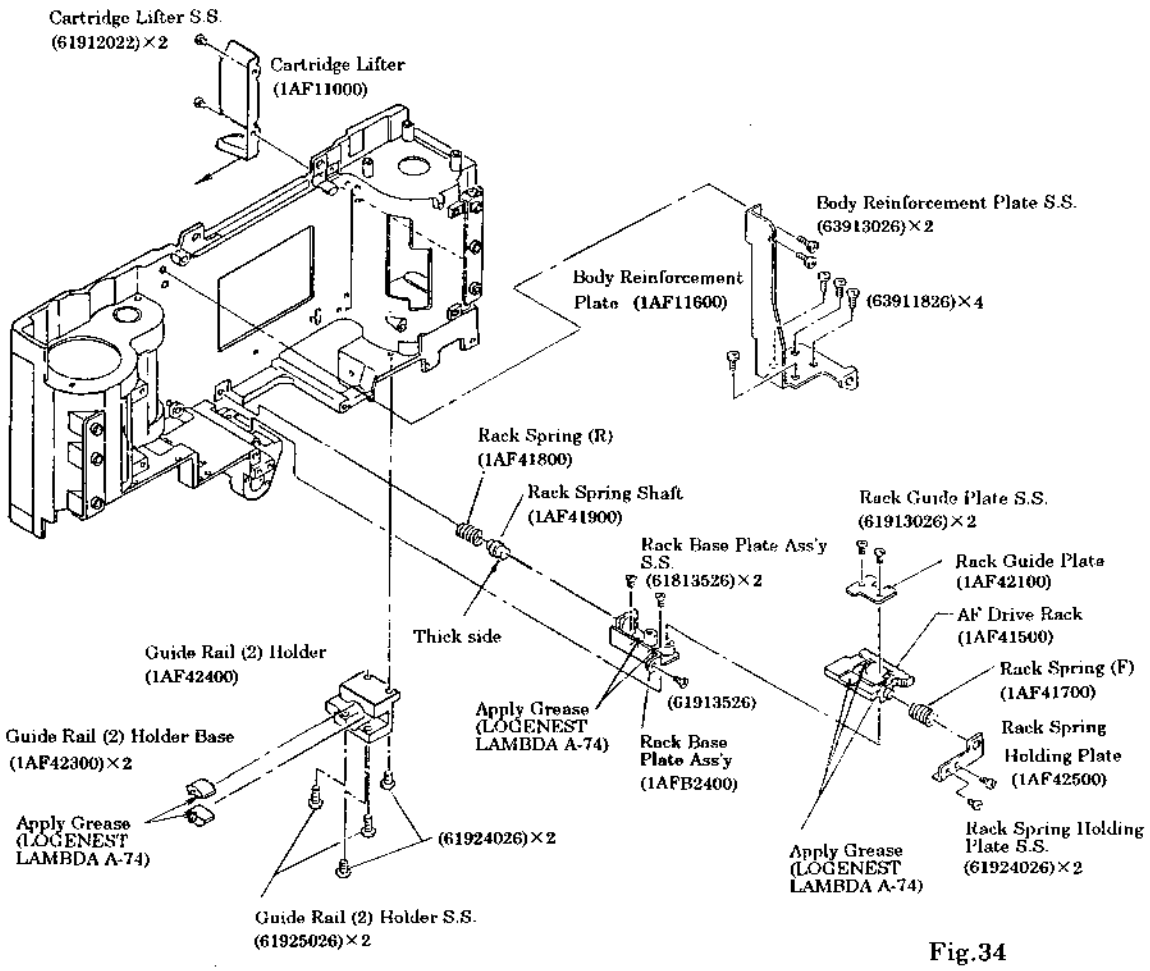


Fig.34

B-11. DISASSEMBLY & REASSEMBLY OF ASS'Y PARTS

B-11-1. Disassembly of Body Frame Ass'y

[Chart for Disassembly of Body Frame Ass'y]

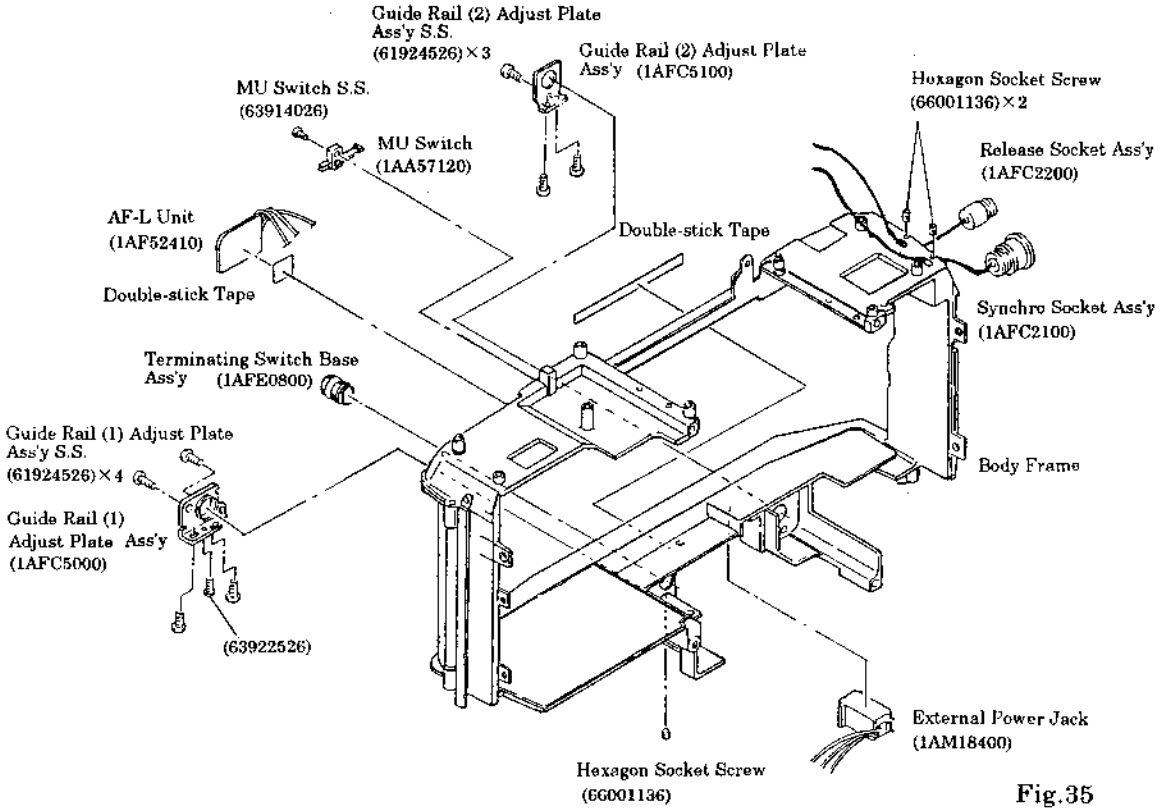

Guide Rail (2) Adjust Plate Ass'y S.S. (61924526)×3
Guide Rail (2) Adjust Plate Ass'y (1AFC5100)
Hexagon Socket Screw (66001136)×2
MU Switch S.S. (63914026)
MU Switch (1AA57120)
Release Socket Ass'y (1AFC2200)
AF-L Unit (1AF52410)
Double-stick Tape
Double-stick Tape
Synchro Socket Ass'y (1AFC2100)
Terminating Switch Base Ass'y (1AFE0800)
Guide Rail (1) Adjust Plate Ass'y S.S. (61924526)×4
Body Frame
Guide Rail (1) Adjust Plate Ass'y (1AFC5000)
(63922526)
External Power Jack (1AM18400)
Hexagon Socket Screw (66001136)

Fig.35

(See Fig. 35)

1) Remove the External Power Jack (1AM18400).
   Notes :
   - The External Power Jack is fixed to the Body Frame with the bond (Cemedine 551).
   - The 3 lead wires of the External Power Jack are fixed to the Body Frame with double-stick tape.
2) Remove the MU Switch Setscrew (63914026) and take off the MU Switch (1AA57120).
3) Peel off the AF-L Unit (1AF52410).
   Note :
   - The AF-L Unit is fixed to the Body Frame with double-stick tape.
4) Remove the Guide Rail (2) Adjust Plate Ass'y Setscrews (61924526)×3 and take off the Guide Rail (2) Adjust Plate Ass'y (1AFC5100).
5) Remove the Guide Rail (1) Adjust Plate Ass'y Setscrews (63922526), (61924526)×4 and take off the Guide Rail (1) Adjust Plate Ass'y (1AFC5000).
6) Remove the Hexagon Socket Screw (66001136) and take off the Terminating Switch Base Ass'y (1AFE0800) by turning it.
7) Remove the Hexagon Socket Screw (66001136) and take off the Release Socket Ass'y (1AFC2200).
8) Remove the Hexagon Socket Screw (66001136) and take off the Synchro Socket Ass'y (1AFC2100).
   Note :
   - Use an Hexagon wrench Key to remove the Hexagon Socket Screws.

[Notes on Installation of AF-L Unit]

* In the camera at the early stage of production, as a tentative measure, the AF-L Unit (1AA52400) is cut and secured by pressing it against the Body Frame as shown in Fig. 36.
  As the permanent measure, the pattern is modified. The pattern is widened so that the AF-L Unit is not cut nor pressed against the Body Frame at fixing.

(Connection Diagram for AF-L Unit)

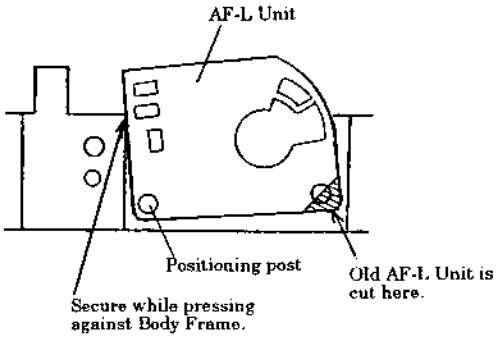


Fig.36

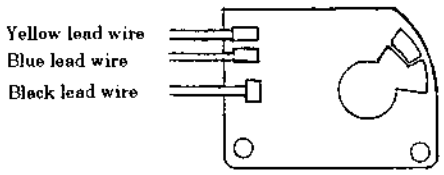


Fig.37

[Short Circuit Prevention of External Power Jack]

* To prevent a short circuit, as shown at right, wind insulating tape (Acetate Cloth Tape) around the terminals of the External Power Jack (1AM18400).

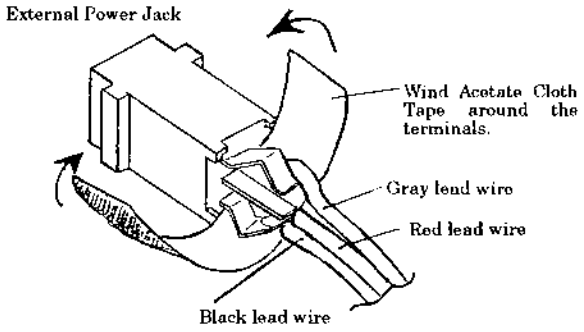


Fig.38

[Dressing of Lead Wires of External Power Jack]

a) Dress the Gray, Red and Black lead wires of the External Power Jack as shown in Fig. 39.
b) Stick the double-stick tape to the Body Frame and as shown in Fig. 40, attach the Gray, Red and Black lead wires to the double-stick tape in the named order.

(Bottom View of Body Frame)

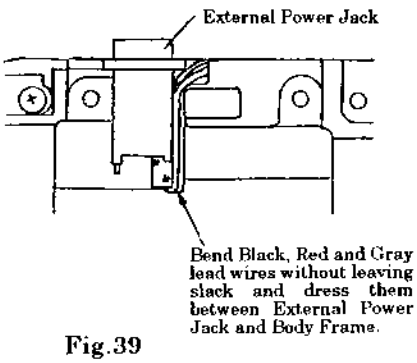

External Power Jack
Bend Black, Red and Gray lead wires without leaving slack and dress them between External Power Jack and Body Frame.

Fig.39

(Back View of Body Frame)

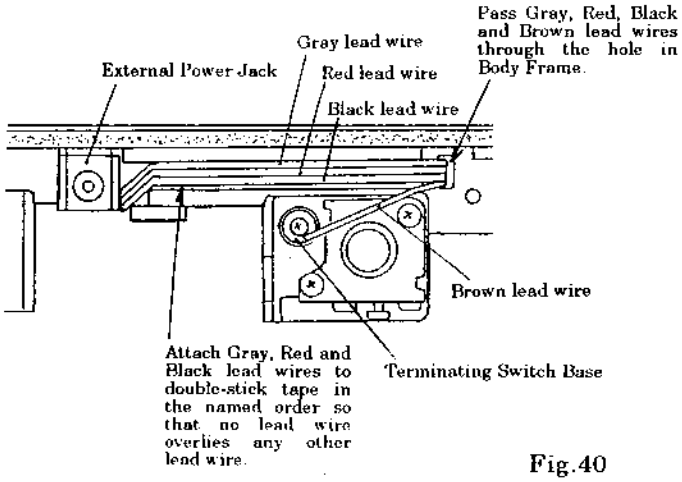

Pass Gray, Red, Black and Brown lead wires through the hole in Body Frame.
Gray lead wire
External Power Jack
Red lead wire
Black lead wire
Brown lead wire
Attach Gray, Red and Black lead wires to double-stick tape in the named order so that no lead wire overlies any other lead wire.
Terminating Switch Base

Fig.40

B-11-2. Disassembly & Reassembly of Mount Base Ass'y

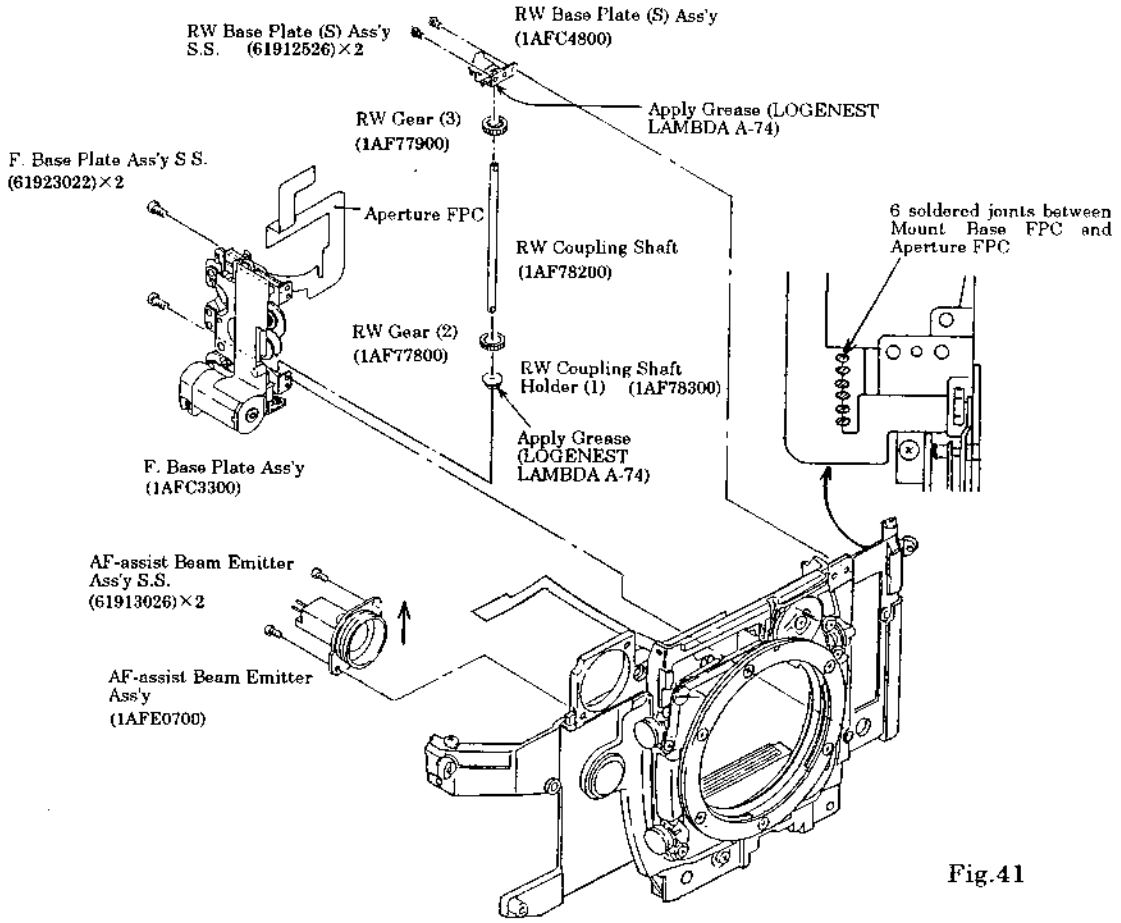

RW Base Plate (S) Ass'y S.S. (61912526)×2
RW Base Plate (S) Ass'y (1AFC4800)
Apply Grease (LOGENEST LAMBDA A-74)
RW Gear (3) (1AF77900)
F. Base Plate Ass'y S.S. (61923022)×2
Aperture FPC
RW Coupling Shaft (1AF78200)
6 soldered joints between Mount Base FPC and Aperture FPC
RW Gear (2) (1AF77800)
RW Coupling Shaft Holder (1) (1AF78300)
Apply Grease (LOGENEST LAMBDA A-74)
F. Base Plate Ass'y (1AFC3300)
AF-assist Beam Emitter Ass'y S.S. (61913026)×2
AF-assist Beam Emitter Ass'y (1AFE0700)

Fig.41

(See Fig. 41)

1) Remove the AF-assist Beam Emitter Ass'y Setscrews (61913026)×2 and take off the AF-assist Beam Emitter Ass'y (1AFE0700).
2) RW Base Plate (S) Ass'y Setscrews (61912526)×2 and take off the RW Base Plate (S) Ass'y (1AFC4800).
3) Remove the RW Gear (3) (1AF77900), RW Coupling Shaft (1AF78200), RW Gear (2) (1AF77800) and RW Coupling Shaft Holder (1) (1AF78300).
4) Unsolder the 6 Soldered joints between the Mount Base FPC and Aperture FPC.
5) Remove the F. Base Plate Ass'y Setscrews (61923022)×2 and F. Base Plate Ass'y (1AFC3300). (See Fig. 42)
6) Remove the Body Mount Setscrews (66001138), (61925522)×5 and take off the Body Mount (1AA75000) and Mount Ring (1AM79000).
7) Remove the Mount Spring Setscrews (61913026)×6 and take off the Mount Spring (13981200) ×3.
8) Remove the Mount Stopper Setscrews (61913026)×2 and take off the Mount Stopper (13981300).
9) Remove the Lens Lock Lever Setscrew (1AA78600) and take off the Lens Lock Lever Spring (1AA78500) and Lens Lock Lever (1AF79900).
10) Remove the Aperture Interlock Cover Setscrew (61902022) and take off the Aperture Interlock Cover (1AA78700).
11) Remove the Aperture Code Ass'y Setscrews (61913026)×2 and take off the Aperture Code Ass'y (1AAAB360).

[Chart for Disassembly of Mount Base Ass'y]

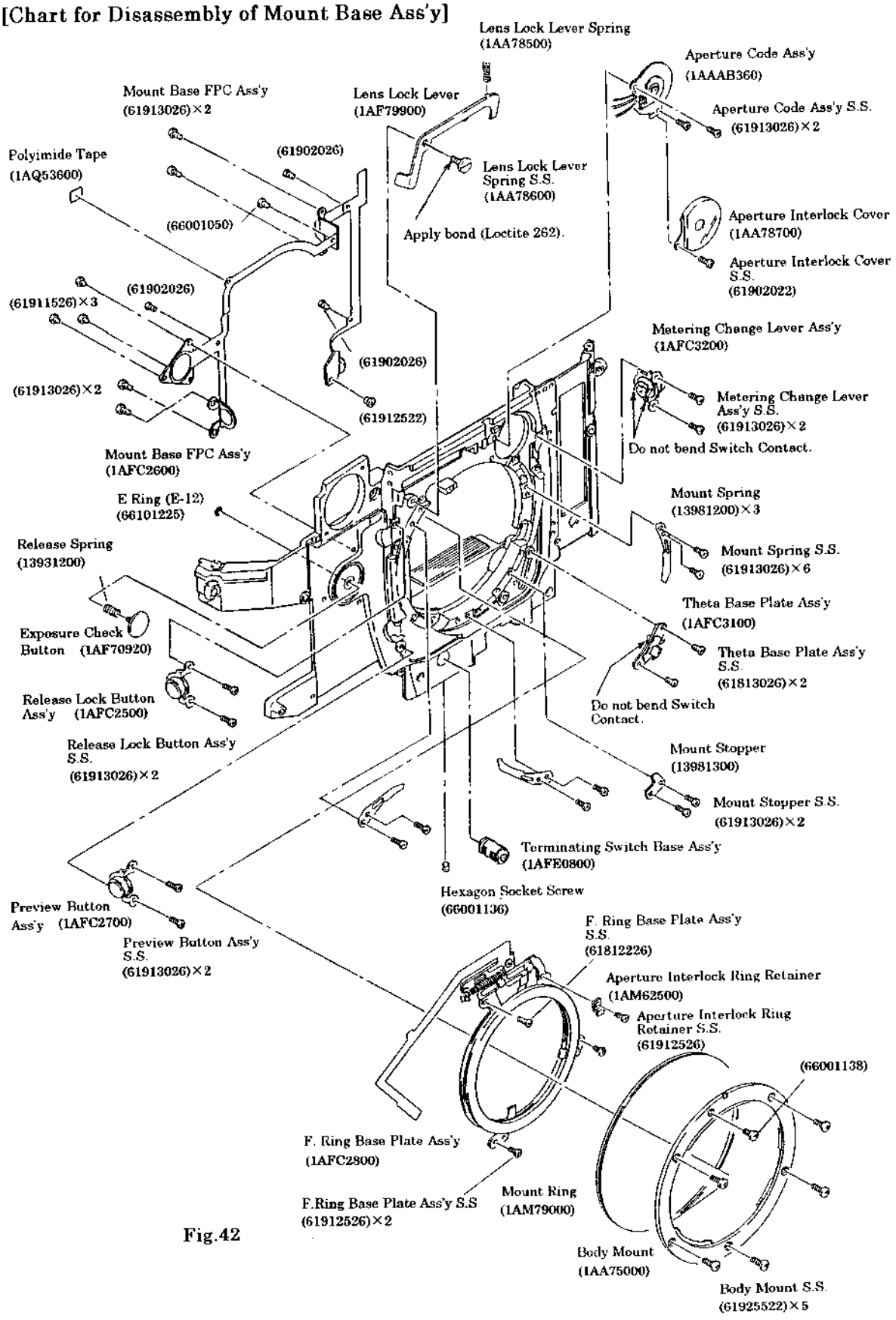


Fig.42

(See Fig. 42)

12) Remove the Hexagon Socket Screw (66001136) and take off the Terminating Switch Base Ass'y (1AFE0800) by turning it.
Note :
- Use an Hexagon wrench Key to remove the Hexagon Socket Screw.

13) Remove the Aperture Interlock Ring Retainer Setscrew (61912526) and take off the Aperture Interlock Ring Retainer (1AM62500).
14) Remove the F. Ring Base Plate Ass'y Setscrews (61912526)×2, (61812226) and take off the F. Ring Base Plate Ass'y (1AFC2800).
15) Remove the Theta Base Plate Ass'y Setscrews (61813026)×2 and take off the Theta Base Plate Ass'y.
Note :
- After removing the Theta Base Plate Ass'y, take care not to bend the switch contact of the Theta Base Plate Ass'y.

16) Remove the Metering Change Lever Ass'y Setscrews (61913026)×2 and take off the Metering Change Lever Ass'y (1AFC3200).
Note :
- After removing the Metering Change Lever Ass'y, take care not to bend the switch contacts of the Metering Change Lever Ass'y.

17) Remove the Preview Button Ass'y Setscrews (61913026)×2 and take off the Preview Button Ass'y (1AFC2700).
18) Remove the Lens Lock Button Ass'y Setscrews (61913026)×2 and take off the Lens Lock Button Ass'y (1AFC2500).
19) Remove the Mount Base FPC Ass'y Setscrews (61912522), (61902026)×3, (66001050), (61913026)×4, (61911526)×4, peel off the Polyimide Tape (1AQ53600) and take off the Mount Base FPC Ass'y (1AFC2600).
20) Remove the E Ring (E-12) (66101225) and take off the Exposure Check Button (1AF70920) and Release Spring (13931200).

[Notes on Installation of AF-assist Beam Emitter Ass'y]

(See Fig. 41)

* The AF-assist Beam Emitter Ass'y (1AFE0700) may interfere with the Body Frame. To prevent such trouble, push up the AF-assist Beam Emitter Ass'y (in the direction of the arrow) and tighten the AF-assist Beam Emitter Ass'y Setscrews (61913026)×2.

[Notes on Bond Application to Lens Lock Lever Setscrew]

* Apply the bond (Loctite 262) to about 1.5 threads of each Lens Lock Lever Setscrew. Take care not to apply of the bond excessively.

[Note on Installation of Mount Ring]

* Install the Mount Ring (1AM79000) in the orientation as shown in Fig. 43.

(Sectional View of Body Mount)

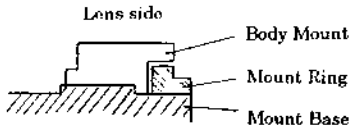


Fig.43

[Reassembly Procedure for Aperture Code Ass'y]

1) Install the F. Ring Base Plate (1AFC2800) and tighten the F. Ring Base Plate Ass'y Setscrews (61912526)×2, (61812226).
2) Install the Aperture Interlock Ring Retainer (1AM62500) and tighten the Aperture Interlock Ring Retainer Setscrews (61912526).
3) Move the Aperture Interlock Ring of the F. Ring Base Plate Ass'y in the direction of the arrow Ⓐ(in the direction of aperture opening) and keep it there. (See Fig. 44)

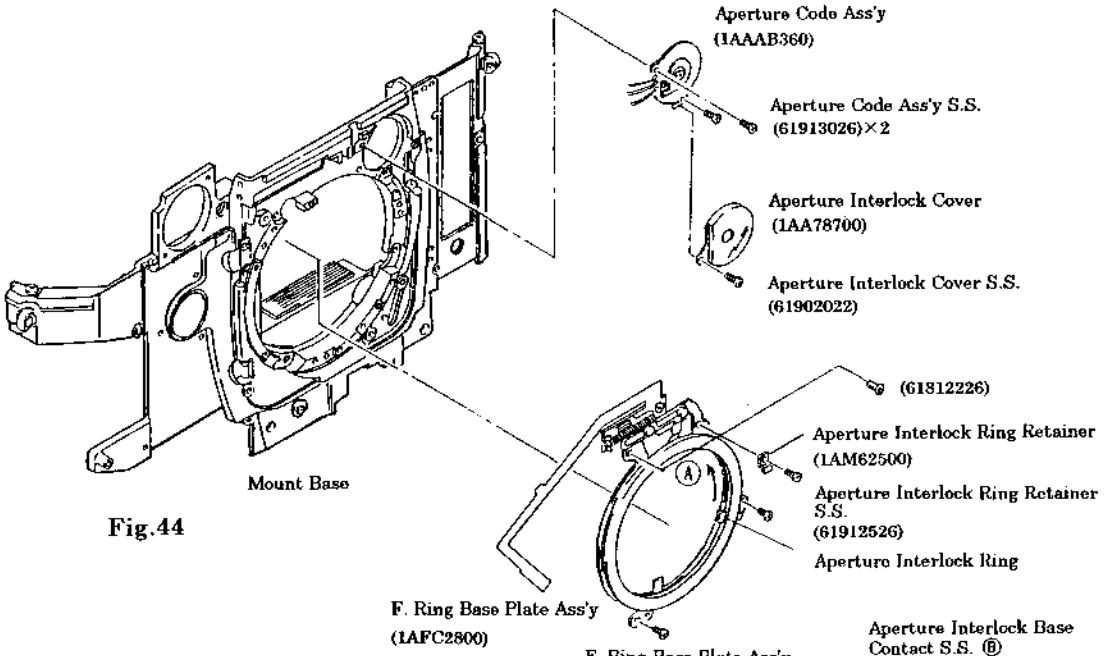


Fig.44

4) As a preliminary turning, turn the Aperture Interlock Base Contact of the Aperture Code Ass'y (1AAAB360) in the direction of the arrow. Then install the Mount Base so that the center of the round end of the Aperture Interlock Base Contact is placed on the second aperture code pattern. (See Fig. 45)
5) Tighten the Aperture Code Ass'y Setscrews (61913026)×2.
   At this point, make certain that the center of the round end of the Aperture Interlock Base Contact is placed on the second pattern.
   If it is dislocated, loosen the Aperture Interlock Base Contact Setscrew Ⓑ and adjust the position again. (See Fig. 45)

   Note :
   - When installing the Aperture Code Ass'y on the Mount Base, the hook point Ⓒ (marked with a felt-tipped marker) of the Spiral Spring to the Aperture Interlock Gear (A) of the Aperture Code Ass'y must be positioned in the area as shown in Fig. 46.

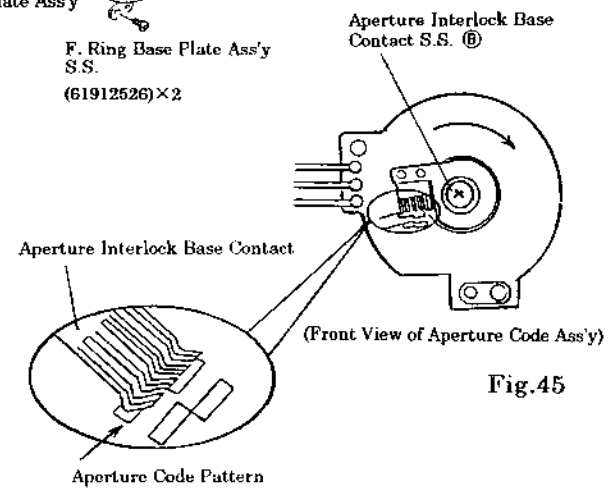

Aperture Interlock Base Contact S.S. Ⓑ
Aperture Interlock Base Contact
(Front View of Aperture Code Ass'y)
Aperture Code Pattern

Fig.45

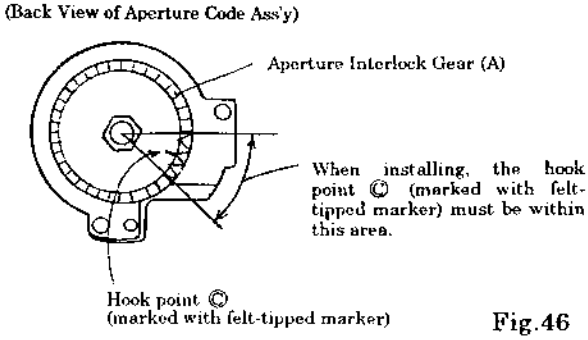

(Back View of Aperture Code Ass'y)
Aperture Interlock Gear (A)
When installing, the hook point Ⓒ (marked with felt-tipped marker) must be within this area.
Hook point Ⓒ
(marked with felt-tipped marker)

Fig.46

[Installation Procedure for F. Base Plate Ass'y]

1) Make certain that the Roller of the FD Lever (1) is in the upper position.

   (Procedure for Setting of Roller of FD Lever (1) in the Upper Position)
   (See Fig. 47)
   ① Move the Roller of the FD Lever (1) upward (in the direction of the arrow Ⓐ) and hold it there.
   ② Move the FC Claw in the direction of the arrow Ⓑ and engage it with the Aperture Gear (4) so that the Roller of the FD Lever (1) is locked.

   (See Fig. 48)
2) Move the Aperture Interlock Plate in the direction of the arrow Ⓒ (to the aperture open position) and while keeping it there, install the F. Base Plate Ass'y (1AFC3300) on the Mount Base.
   At this point, make certain that the Roller of the FD Lever (1) and the Roller of the F. Ring are installed in the position as shown in Fig. 48.
3) Tighten the F. Base Plate Ass'y Setscrews (61923026)×2.

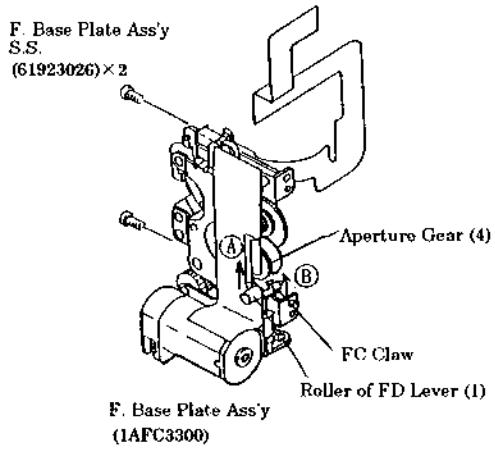


Fig.47

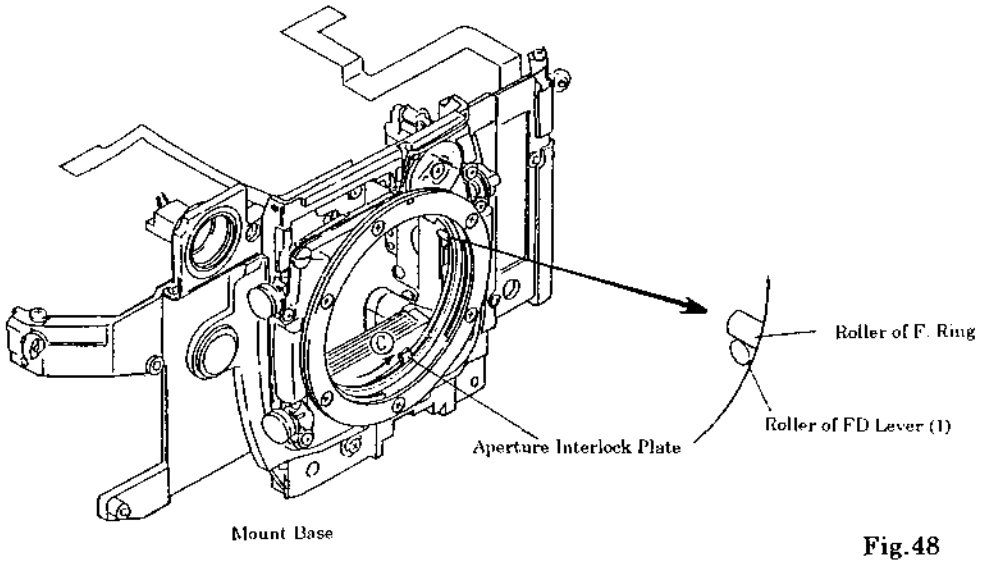


Fig.48

B-11-3. Disassembly of S. Charge Base Plate Ass'y

[Chart for Disassembly of S. Charge Base Plate Ass'y]

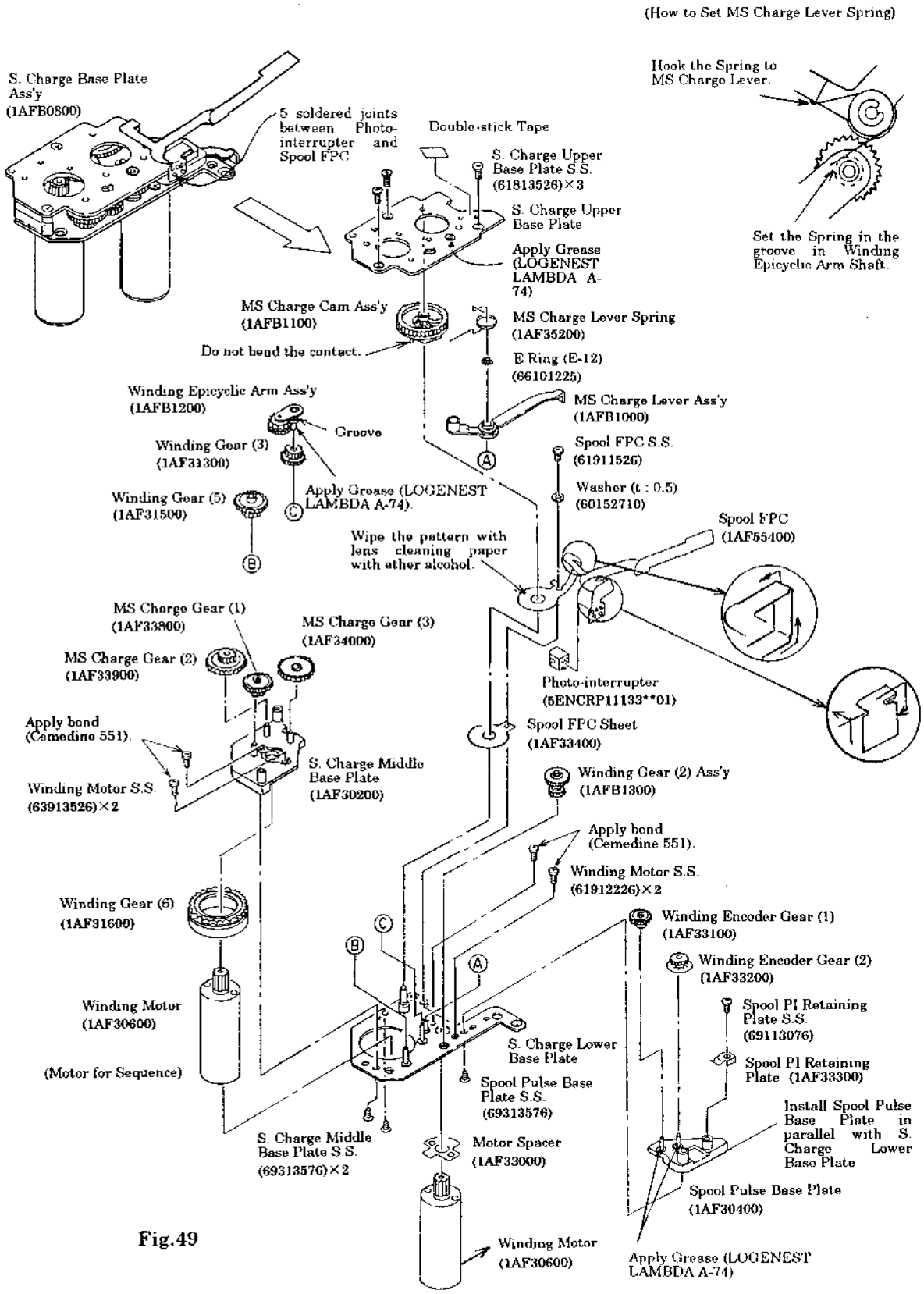

(How to Set MS Charge Lever Spring)
Hook the Spring to MS Charge Lever.
Set the Spring in the groove in Winding Epicyclic Arm Shaft.
S. Charge Base Plate Ass'y (1AFB0800)
5 soldered joints between Photo-interrupter and Spool FPC
Double-stick Tape
S. Charge Upper Base Plate S.S. (61813526)×3
S. Charge Upper Base Plate
Apply Grease (LOGENEST LAMBDA A-74)
MS Charge Cam Ass'y (1AFB1100)
Do not bend the contact.
MS Charge Lever Spring (1AF35200)
E Ring (E-12) (66101225)
Winding Epicyclic Arm Ass'y (1AFB1200)
Groove
MS Charge Lever Ass'y (1AFB1000)
Winding Gear (3) (1AF31300)
Spool FPC S.S. (61911526)
Winding Gear (5) (1AF31500)
Apply Grease (LOGENEST LAMBDA A-74).
Washer (t : 0.5) (60152710)
Wipe the pattern with lens cleaning paper with ether alcohol.
Spool FPC (1AF55400)
MS Charge Gear (1) (1AF33800)
MS Charge Gear (3) (1AF34000)
MS Charge Gear (2) (1AF33900)
Photo-interrupter (5ENCRP11133**01)
Apply bond (Cemedine 551).
Spool FPC Sheet (1AF33400)
S. Charge Middle Base Plate (1AF30200)
Winding Motor S.S. (63913526)×2
Winding Gear (2) Ass'y (1AFB1300)
Apply bond (Cemedine 551).
Winding Motor S.S. (61912226)×2
Winding Gear (6) (1AF31600)
Winding Encoder Gear (1) (1AF33100)
Winding Encoder Gear (2) (1AF33200)
Spool PI Retaining Plate S.S. (69113076)
Winding Motor (1AF30600)
(Motor for Sequence)
S. Charge Lower Base Plate
Spool PI Retaining Plate (1AF33300)
Spool Pulse Base Plate S.S. (69313576)
Install Spool Pulse Base Plate in parallel with S. Charge Lower Base Plate
S. Charge Middle Base Plate S.S. (69313576)×2
Motor Spacer (1AF33000)
Spool Pulse Base Plate (1AF30400)
Winding Motor (1AF30600)
Apply Grease (LOGENEST LAMBDA A-74)

Fig.49

(See Fig. 49)

1) Remove the S. Charge Upper Base Plate Setscrews (61813526)×3 and take off the S. Charge Upper Base Plate.
   Note :
   - Take due care, since the Spool FPC is fixed to the S. Charge Upper Base Plate Ass'y with double-stick tape (5×10 mm).
2) Unsolder the 5 soldered joints between the Photo-interrupter and the Spool FPC.
3) Remove the Winding Gear (2) Ass'y (1AFB1300), Winding Gear (5) (1AF31500), MS Charge Gear (1) (1AF33800), MS Charge Gear (3) (1AF34000), MS Charge Gear (2) (1AF33900) and MS Charge Cam Ass'y (1AFB1100).
4) Remove the MS Charge Lever Spring (1AF35200).
5) Remove the Winding Gear (3) (1AF31300), Winding Epicyclic Arm Ass'y (1AFB1200) and Winding Encoder Gear (1) (1AF33100).
6) Remove the Spool PI Retaining Plate Setscrew (61913026) and take off the Spool PI Retaining Plate (1AF33300), Photo-interrupter (5ENCRP11133**01) and Winding Encoder Gear (2) (1AF33200).
7) Remove the S. Charge Middle Base Plate Setscrews (61813526)×2 and take off the S. Charge Middle Base Plate W/ Winding Motor.
8) Remove the E Ring (E-12) (66101225) and take off the MS Charge Lever Ass'y (1AFB1000).
9) Remove the Spool FPC Setscrew (61911526) and take off the Washer (60152710) and Spool FPC (1AF55400).
10) Remove the Winding Motor Setscrews (61912226)×2 and take off the Motor Spacer (1AF33000) and Winding Motor (1AF30600).
11) Remove the Spool Pulse Base Plate Setscrews (61813526) and take off the Spool Pulse Base Plate (1AF30400).
12) Remove the Winding Motor Setscrews (63913526)×2 and separate the Winding Motor (1AF30600) (Motor for Sequence), Winding Gear (6) (1AF31600) and S. Charge Middle Base Plate (1AF30200) from each other.

[Notes on Reassembly of S. Charge Base Plate Ass'y]

a) Install the Spool Pulse Base Plate in parallel with the S. Charge Base Plate.
b) When installing the Winding Motor, tighten the Winding Motor Setscrews while pushing the Winding Motor in the direction of the arrow as shown in Fig. 49.
c) Form the Spool FPC as shown in Fig. 49 before installing it.
d) Wipe the contact pattern of the Spool FPC with lens cleaning paper with ether alcohol.
e) Take care not to bend the contact of the MS Charge Cam Ass'y. Wipe the contact with lens cleaning paper with ether alcohol.
f) When installing each gear, take care not to confuse the top and bottom.
g) Apply LOGENEST LAMBDA A-74 to the specified greasing points.

[Chart for Greasing Points]

(S. Charge Middle Base Plate)

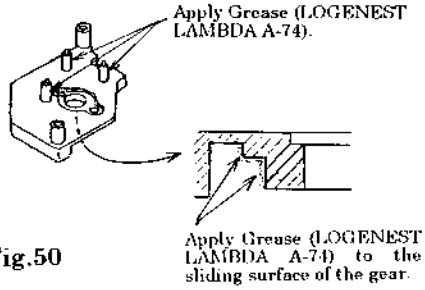


Fig.50

(S. Charge Lower Base Plate)

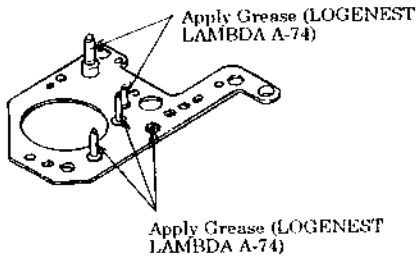


Fig.51

B-11-4. Disassembly of Mirror Box Ass'y

1) Remove the Eye-piece Lens Ass'y Setscrews (69216076)×2 and take off the Eye-piece Lens Ass'y (1AFF0300).
2) Remove the Finder LCD Ass'y Setscrews (66001046)×2.
3) Remove the Penta Prism Ass'y Setscrews (69215576)×4 and take off the Focus Adjust Washers at four positions and Penta Prism Ass'y.
4) Remove the Finder LCD Ass'y (1AFF0200).

Notes :

- Never remove the Base Plate or associated parts from either side of the Mirror Box Ass'y or the AF Module, Mirror or associated parts from the bottom of the Mirror Box Ass'y ; otherwise, faulty viewfinder focusing or auto focusing can be caused.
- For the Focus Adjust Washers under the Penta Prism Ass'y, reinstall the same Washers that have been removed. If faulty viewfinder focusing occurs, adjust viewfinder focusing by replacing these Focus Adjust Washers.
- Remove the Finder LCD Ass'y carefully, since its FPC is fixed to the side of the Mirror Box Ass'y with double-stick tape.
- Form the FPC for the Finder LCD Ass'y as shown in Fig. 52 before installing it on the Mirror Box.
- Once the Finder LCD Ass'y is removed, make the adjustment of viewfinder indication positions. (See page C-3.)

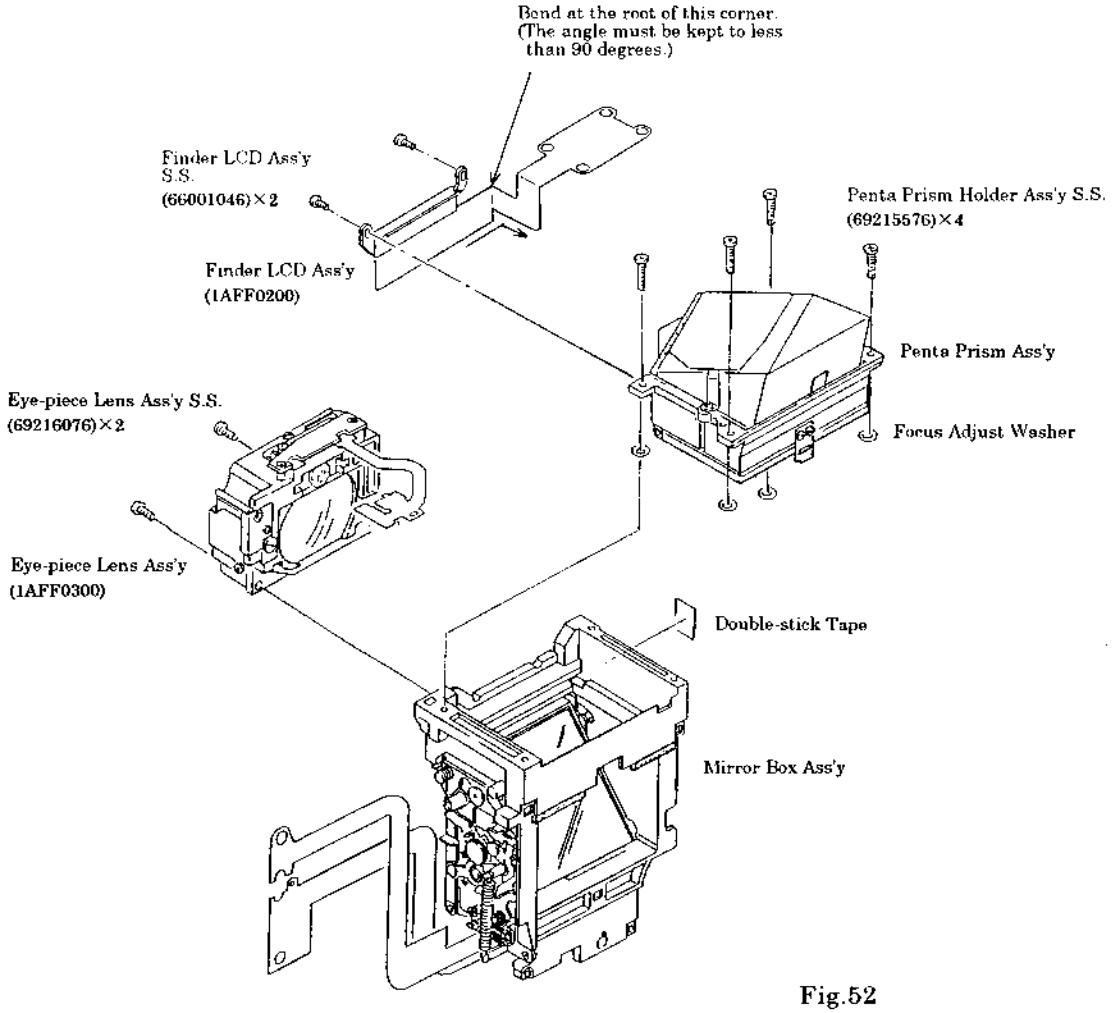

Bend at the root of this corner.
(The angle must be kept to less than 90 degrees.)
Finder LCD Ass'y S.S. (66001046)×2
Finder LCD Ass'y (1AFF0200)
Penta Prism Holder Ass'y S.S. (69215576)×4
Penta Prism Ass'y
Focus Adjust Washer
Eye-piece Lens Ass'y S.S. (69216076)×2
Eye-piece Lens Ass'y (1AFF0300)
Double-stick Tape
Mirror Box Ass'y

Fig.52

B-11-5. Disassembly of Penta Prism Ass'y

Note :

- Shielder (black) has been applied to the gap between the Penta Prism and the Penta Prism Holder to prevent dust from entering the Viewfinder. Therefore, remove the shielder before removing the Penta Prism.

1) Pick off the Shielder applied around the Penta Prism, using tweezers or the like.
2) Peel off the Penta. Cover (17484210).
   Note :
   - The Penta. Cover is fixed to the Penta Prism with double-stick tape.
3) Peel off the Penta Prism Dust-proof Moquette (1AA82110).
4) Peel off the Acetate Cloth Tape.
5) Remove the Penta Prism Retaining Spring Setscrews (63912526)×2 and take off the Penta Prism Retaining Spring (1AF80500).
6) Remove the Penta. Cover (17484210).
7) Lower the FS Holder Ass'y (1AMF0200) by pushing the end of the FS Lock Spring (L) and remove the Focusing Screen (1AH84900).
8) Remove the Penta Prism Retaining Plate (1AA82200).
9) Remove the Penta Prism (1AF80100) and Viewfinder Frame (B) (1AF80800).
10) Remove the Finder Indication Prism (1AF81100).
    Note :
    - The Finder Indication Prism is fixed with the bond (Cemedine 551). (See Fig. 55)
11) Remove the Penta Prism Spacer (1AF80300), Condenser Lens (1AF80600) and Viewfinder Frame (A) (1AF80700).

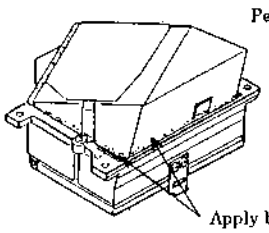


Fig.53

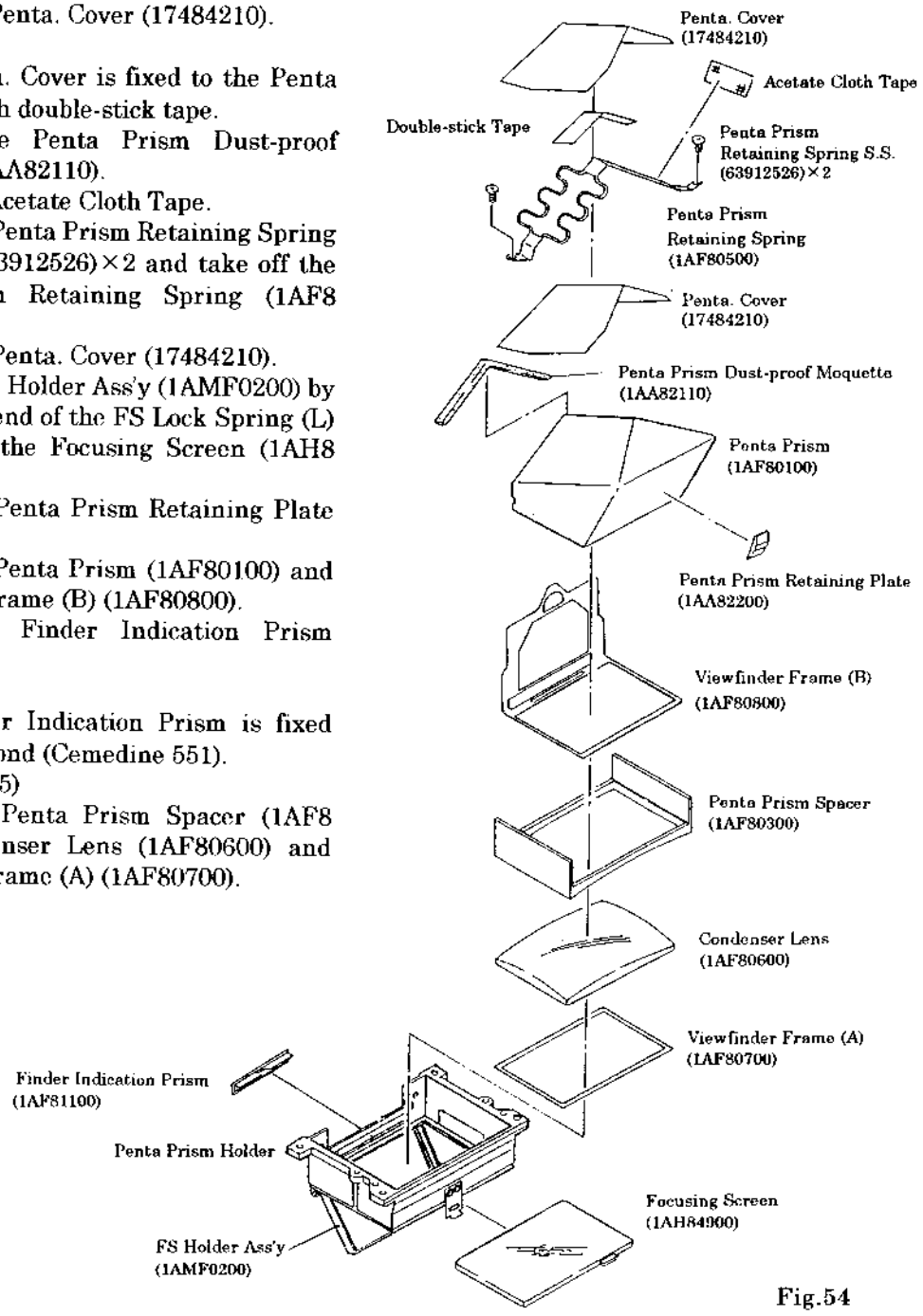


Fig.54

[Attaching of Finder Indication Prism]

1) On the Penta Prism Holder, install the Viewfinder Frame (A) (1AF80700), Condenser Lens (1AF80600) and Penta Prism Spacer (1AF80300) in the named order.
2) Install the Finder Indication Prism (1AF8 1100) on the Penta Prism Holder.
3) Apply the bond (Cemedine 551) as shown in Fig. 55.
   Note :
   - There must be no bond (Cemedine 551) protruding or roping out.

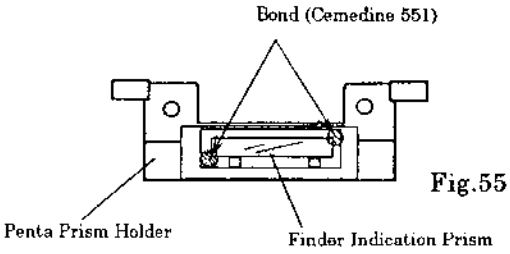


Fig.55

[Note on Replaced Penta Prism]

- When the Penta Prism has been replaced with a new one, paint the corners of the newly installed Penta Prism with a black felt-tipped marker.

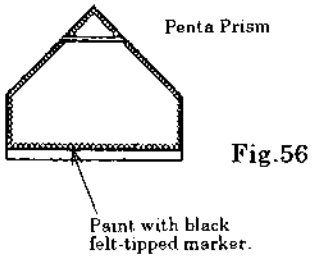


Fig.56

[Checks after Installation of Penta Prism]

- After the installation of the Penta Prism, make certain that there is no dust in the Viewfinder.
- After the installation of the Penta Prism, apply the shielder to the gap between the Penta Prism and the Penta Prism Holder.

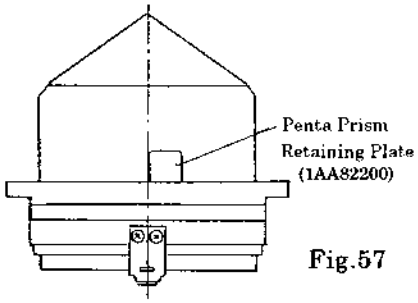


Fig.57

[Note on Position of Installed Penta Prism Retaining Plate]

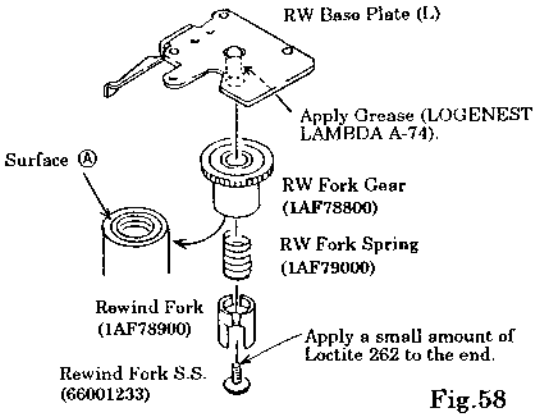
* Position the Penta Prism Retaining Plate (1AA82200) a little to the right of the center as viewed from front. (See Fig. 57)

B-11-6. Disassembly of RW Base Plate (L) Ass'y

1) Remove the Rewind Fork Setscrew (66001233) and take off the Rewind Fork (1AF78900), RW Fork Spring (1AF79000), RW Fork Gear (1AF78800) from the RW Base Plate (L).

[Note on Application of Screw Lock]

* Apply a small amount of Screw Lock (Loctite #262) to the end of the Rewind Fork Setscrew (66001233).
  In doing so, take care that no Screw Lock is applied to the surface Ⓐ of the RW Fork Gear (1AF78800).


RW Base Plate (L)
Apply Grease (LOGENEST LAMBDA A-74).
Surface Ⓐ
RW Fork Gear (1AF78800)
RW Fork Spring (1AF79000)
Rewind Fork (1AF78900)
Apply a small amount of Loctite 262 to the end.
Rewind Fork S.S. (66001233)
Fig.58

B-11-7. Disassembly of Back Cover Ass'y

1) Remove the Pressure Plate Ass'y (1AFD1700).
2) Remove the Pressure Plate Base Ass'y Setscrews (66001189)×4 and take off the Pressure Plate Base Ass'y (1AFD1400) from the Back Cover.
3) Remove the Film Roller Base Ass'y Setscrews (69214066)×2 and take off the Film Roller Base Ass'y (1AFD1600) from the Pressure Plate Base Ass'y.
4) Remove the Base Lock Plate Cover Setscrews (66001050)×3 and take off the Base Lock Plate Cover (1AF19400) from the Pressure Plate Base Ass'y.
5) Remove the Base Reinforcement Plate Setscrews (69212566), (69313066)×4 and take off the Base Reinforcement Plate (1AF47300) from the Pressure Plate Base Ass'y.
6) Remove the Lock Release Plate Cover Setscrews (63912566)×2 and take off the Lock Release Plate Cover (1AF15700) from the Back Cover.

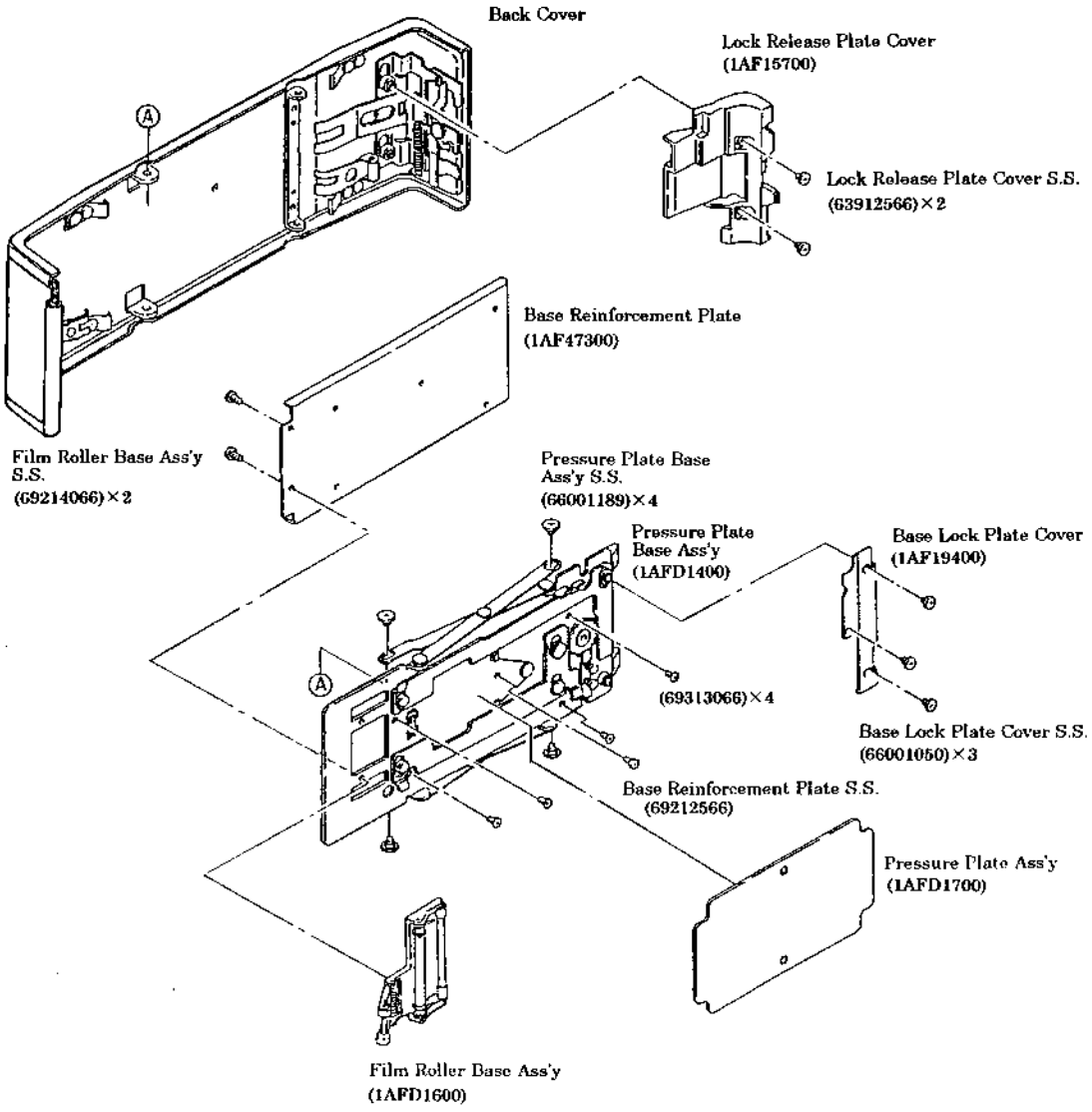


Fig.59

[Notes on Installation of Pressure Plate Base Ass'y]

* When installing the Pressure Plate Base Ass'y on the Back Cover, insert the three posts caulked to the Pressure Plate Base into the forks of the Lock Release Coupling Plate and two Base Guide Plates, respectively.

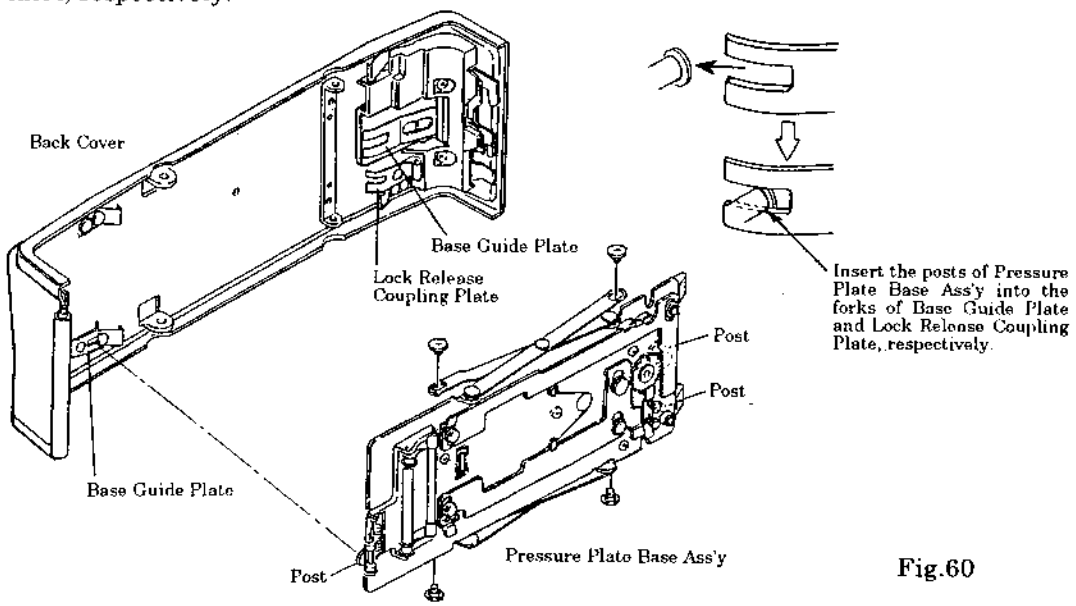

Back Cover
Base Guide Plate
Lock Release Coupling Plate
Insert the posts of Pressure Plate Base Ass'y into the forks of Base Guide Plate and Lock Release Coupling Plate, respectively.
Post
Post
Base Guide Plate
Post
Pressure Plate Base Ass'y

Fig.60

[Operation Check of Base Lock Plates (Upper) and (Lower)]

* After reassembling the Back Cover Ass'y, check the operation of the Base Lock Plate (Upper) and the Base Lock Plate (Lower) by the following procedure.
  If the Base Lock Plate (Upper) and Base Lock Plate (Lower) do not operate properly, the Base Lock Switch inside the Body does not turn ON and the Camera does not operate, with "00" blinking on the Display Panel.

(Operation Check Procedure)

1) Move the Release Lock Pawl downward.
2) Push the Lock Release Stop Lever with tweezers or the like.
3) Push the Base Lock Stop Plate with tweezers or the like and make certain that the Base Lock Plate (Upper) and Base Lock Plate (Lower) operate smoothly.
4) After operation check of Base Lock Plates (Lower) and (Lower), move the Release Lock Pawl to the lower position.

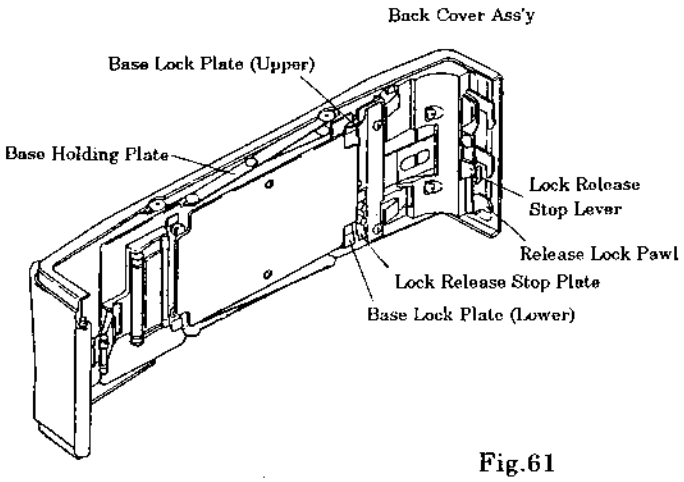


Fig.61

[Operation Check of Pressure Plate Base Ass'y]

* Make certain that the Pressure Plate Base Ass'y advances and returns smoothly.

B-11-7. Disassembly of Back Cover (D) Ass'y (Data Back)

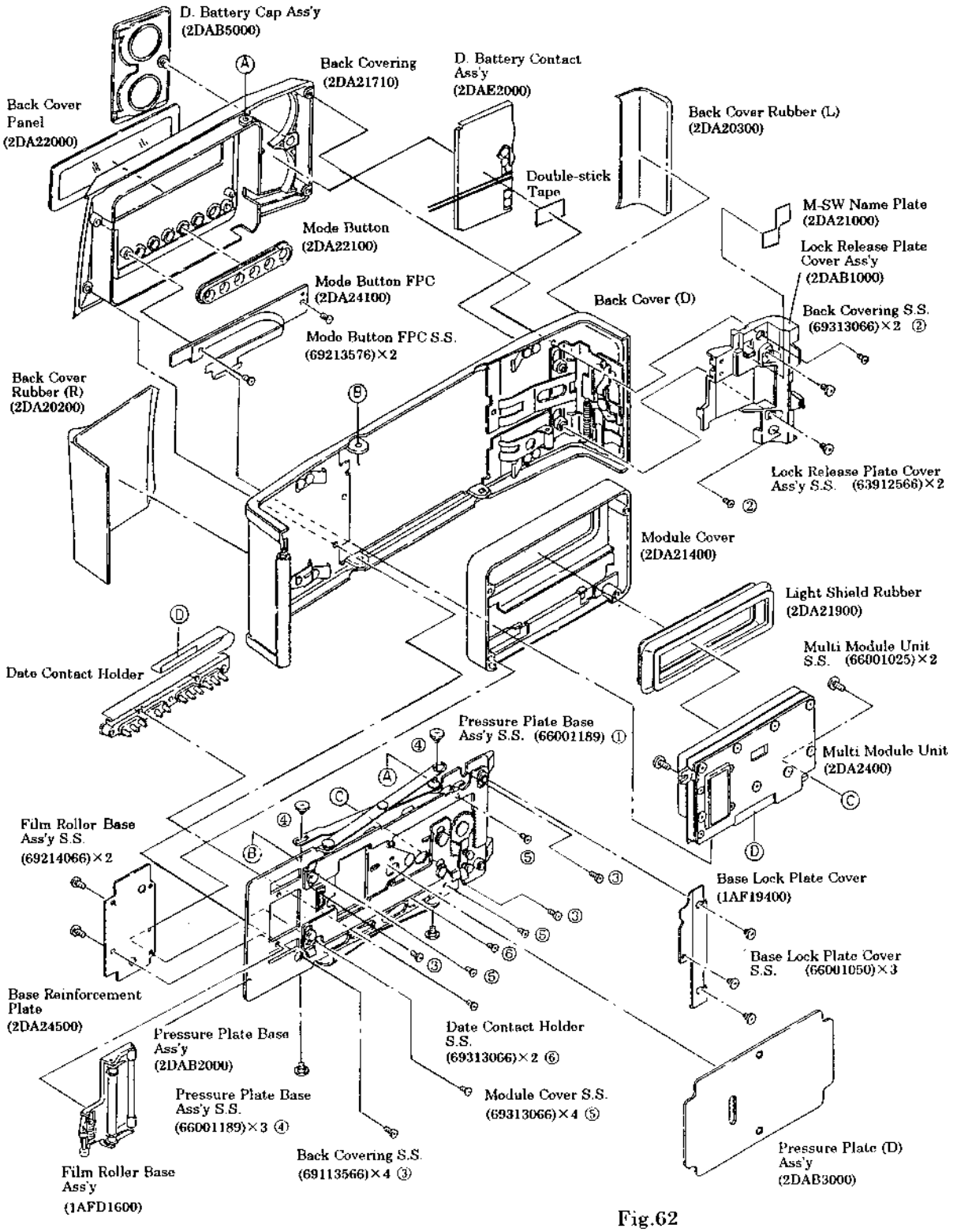

D. Battery Cap Ass'y (2DAB5000)
Back Covering (2DA21710)
D. Battery Contact Ass'y (2DAE2000)
Back Cover Panel (2DA22000)
Back Cover Rubber (L) (2DA20300)
Double-stick Tape
M-SW Name Plate (2DA21000)
Lock Release Plate Cover Ass'y (2DAB1000)
Mode Button (2DA22100)
Mode Button FPC (2DA24100)
Back Cover (D)
Back Covering S.S. (69313066)×2 ②
Mode Button FPC S.S. (69213576)×2
Back Cover Rubber (R) (2DA20200)
Lock Release Plate Cover Ass'y S.S. (63912566)×2
Module Cover (2DA21400)
Light Shield Rubber (2DA21900)
Multi Module Unit S.S. (66001025)×2
Date Contact Holder
Pressure Plate Base Ass'y S.S. (66001189) ①
Multi Module Unit (2DA2400)
Film Roller Base Ass'y S.S. (69214066)×2
Base Lock Plate Cover (1AF19400)
Base Lock Plate Cover S.S. (66001050)×3
Base Reinforcement Plate (2DA24500)
Pressure Plate Base Ass'y (2DAB2000)
Date Contact Holder S.S. (69313066)×2 ⑥
Pressure Plate Base Ass'y S.S. (66001189)×3 ④
Module Cover S.S. (69313066)×4 ⑤
Back Covering S.S. (69113566)×4 ③
Pressure Plate (D) Ass'y (2DAB3000)
Film Roller Base Ass'y (1AFD1600)

Fig.62

(See Fig. 62)

1) Remove the D. Battery Cap Ass'y (2DAB5000) and take out the two Batteries (CR2025).
2) Remove the Pressure Plate (D) Ass'y (2DAB3000).
3) Peel off the Back Cover Rubber (L) (2DA20300) and Back Cover Rubber (R) (2DA20200).
4) Remove the Pressure Plate Base Ass'y Setscrew (66001189) ①.
5) Peel off the Back Cover Panel (2DA22000).

Note :

- The Back Cover Panel is fixed to the Back Covering with the Panel Tapes (1) (2DA23600)×2 and Panel Tape (2) (2DA23700)×2.

6) Peel off the M-SW Name Plate (2DA21000) and remove the Back Covering Setscrews (69313066)×2 ② through the holes in the Lock Release Plate Cover. Move the Release Lock Pawl downward (see Fig. 63), remove the Back Covering Setscrews (69113566)×4 ③ through the hole in the Pressure Plate Base and separate the Back Covering (2DA21710) from the Back Cover (D).

Note :

- The M-SW Name Plate is fixed to the Lock Release Plate Cover with the bond (Cemedine 551).

7) Remove the Mode Button FPC Setscrews (69213576)×2 and take off the Mode Button (2DA22100) from the Back Covering (2DA21710).
8) Unsolder the Black and Red lead wires (from D. Battery Contact) on the Multi Module Unit. (See Fig. 64) After that, remove the D. Battery Contact Ass'y (2DAE2000).

Note :

- The D. Battery Contact Ass'y is fixed to the Back Cover (D) with double-stick tape.

9) Unsolder the Gray and Brown lead wires (from M-SW) on the Multi Module Unit. (See Fig. 64)
10) Remove the Pressure Plate Base Ass'y Setscrews (66001189)×3 ④ and take off the Pressure Plate Base Ass'y (2DAB2000) from the Back Cover (D).
11) Remove the Film Roller Base Ass'y Setscrews (69214066)×2 and take off the Film Roller Base Ass'y (1AFD1600).
12) Push the Lock Release Stop Lever with tweezers or the like and also push the Lock Release Stop Plate. (See Fig. 63) Remove the Module Cover Setscrews (69313066)×4 ⑤ and Date Contact Holder Setscrews (69313066)×2 ⑥ and take off the Base Reinforcement Plate (2DA24500), Module Cover (2DA21400) and Light Shield Rubber (2DA21900) from the Pressure Plate Base Ass'y.
13) Remove the Multi Module Unit Setscrews (66001025)×2 and take off the Multi Module Unit (2DA24000) W/ Date Contact Holder and the Mode Button FPC (2DA24100) from the Pressure Plate Base Ass'y.

Note :

- Once the Multi Module Unit (2DA24000) is removed, adjust the Multi Module Unit position.

14) Remove the Base Lock Plate Cover Setscrews (66001050)×3 and take off the Base Lock Plate Cover (1AF19400).
15) Remove the Lock Release Plate Cover Ass'y Setscrews (63912566)×3 and take off the Lock Release Plate Cover Ass'y (2DAB1000).

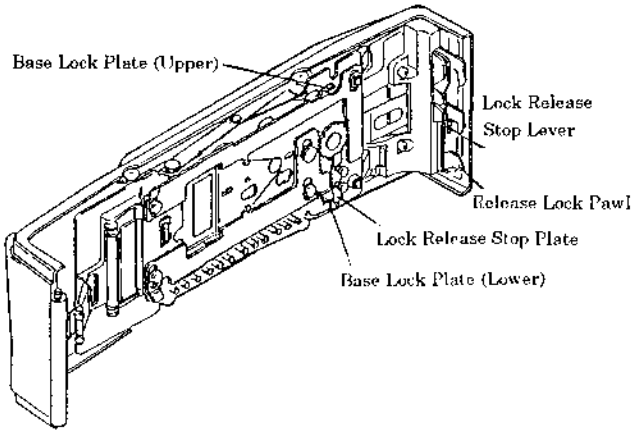


Fig.63

[Wiring & Lead Wire Dressing Chart and Precautions]

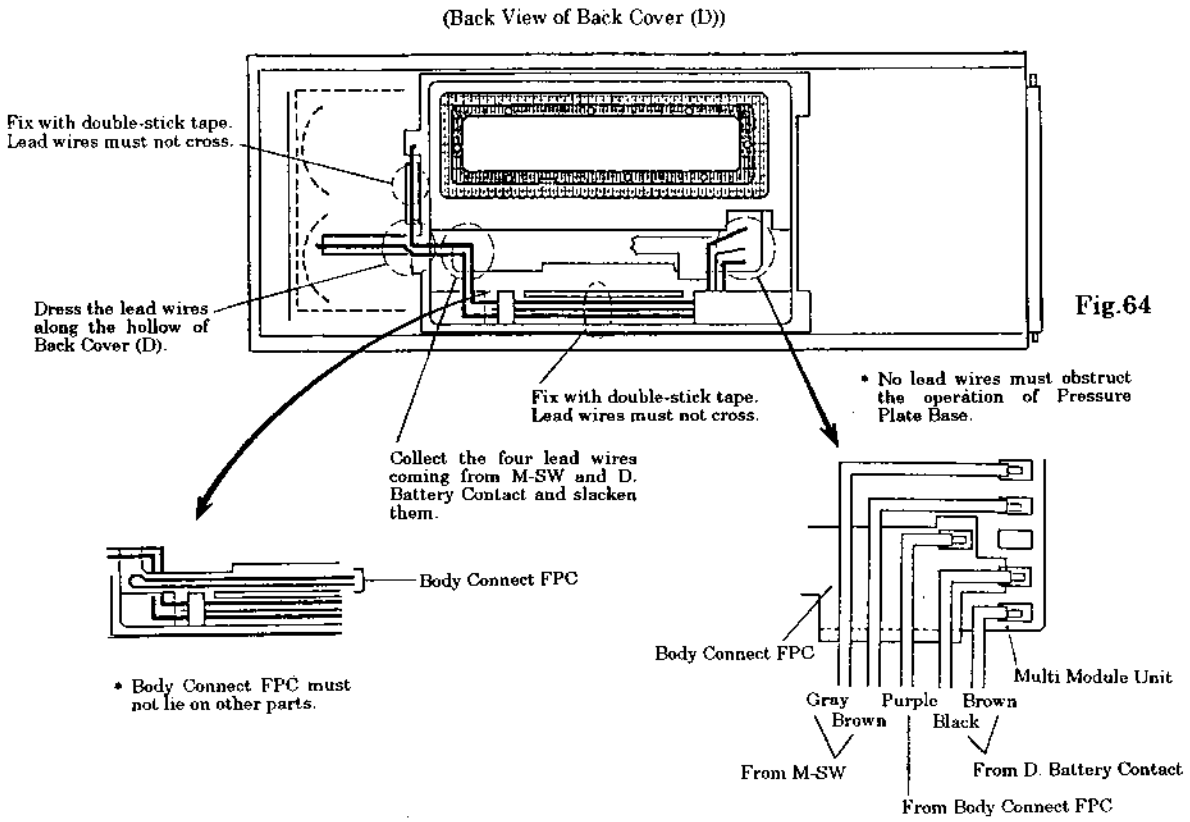

(Back View of Back Cover (D))
Fix with double-stick tape. Lead wires must not cross.
Dress the lead wires along the hollow of Back Cover (D).
Fix with double-stick tape. Lead wires must not cross.
* No lead wires must obstruct the operation of Pressure Plate Base.
Collect the four lead wires coming from M-SW and D. Battery Contact and slacken them.
Body Connect FPC
* Body Connect FPC must not lie on other parts.
Body Connect FPC
Multi Module Unit
Gray
Brown
Purple
Brown
Black
From M-SW
From D. Battery Contact
From Body Connect FPC

Fig.64

[Reassembly of Body Connect FPC]

1) Install the Back Cover Connector Pins (2D A21600) × 12 and Contact Springs (1AH1 5900) × 12 on the Date Contact Holder (2DA21500).
2) Wipe the pattern of the Body Connect FPC (2DA24200) with lens cleaning paper with ether alcohol.
3) Install the Body Connect FPC on the Date Contact Holder and tighten the Body Connect FPC Setscrews (69213576) × 3.
   In doing so, fold back the Body Connect FPC and secure both folds with one of the Body Connect FPC Setscrews.
4) Solder the Purple lead wire.
5) Bend the Body Connect FPC as shown in Fig. 66.

(Checks)

a) Push the Back Cover Connector Pins and make certain that the Contact Springs work for smooth operation.
b) Make certain that the Back Cover Connector Pins, when positioned upright, are in alignment.

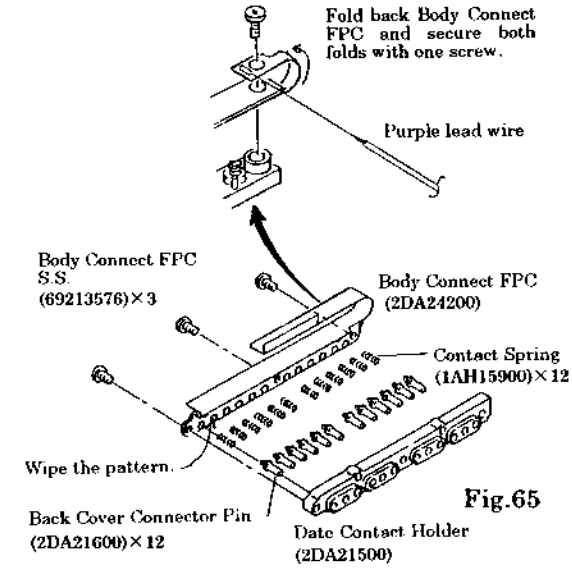

Fold back Body Connect FPC and secure both folds with one screw.
Purple lead wire
Body Connect FPC S.S. (69213576) × 3
Body Connect FPC (2DA24200)
Contact Spring (1AH15900) × 12
Wipe the pattern.
Back Cover Connector Pin (2DA21600) × 12
Date Contact Holder (2DA21500)

Fig.65

(Bending of Body Connect FPC)

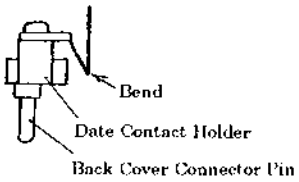


Fig.66

[Soldering of Multi Module Unit]

1) Solder the M. Indication LED (2DA24300) to the Mode Button FPC (2DA24100).
   Note :
   - Pay attention to the polarity of the M. Indication LED.
2) Solder the Mode Button FPC to the Multi Module Unit (2DA24000).
3) Solder the Body Connect FPC to the Multi Module Unit.
   At that time, solder the jumper wire to the pattern at the right end.

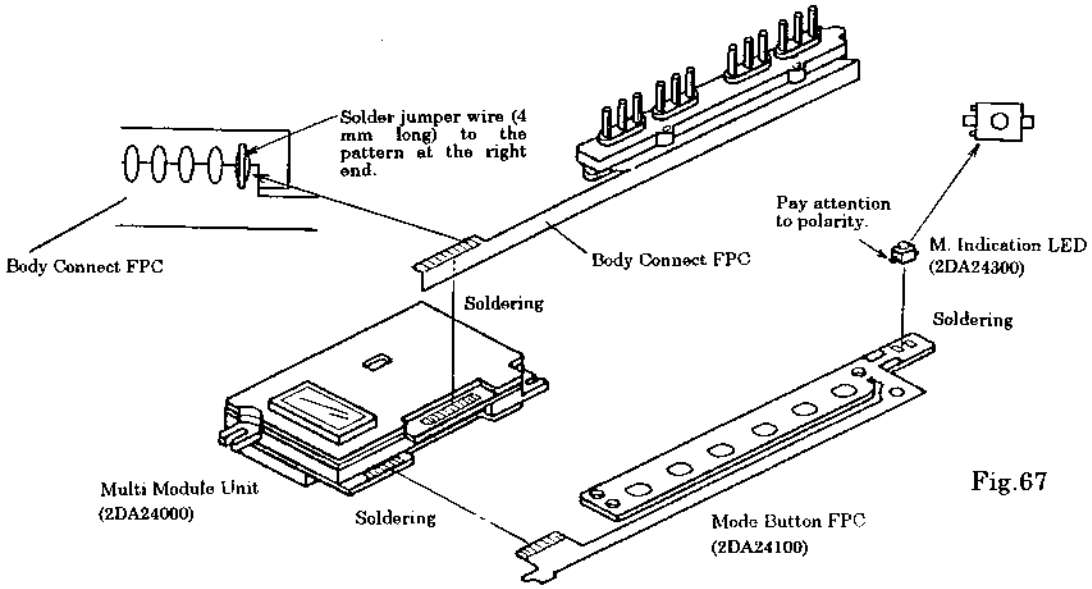


Fig.67

4) Stick double-stick tape (5×8 mm) on the Multi Module Unit. Then fold the Mode Button FPC and attach it to the double-stick tape. (See Fig. 68)
5) Solder the Mode Button FPC at its one pattern. (See Fig. 69)

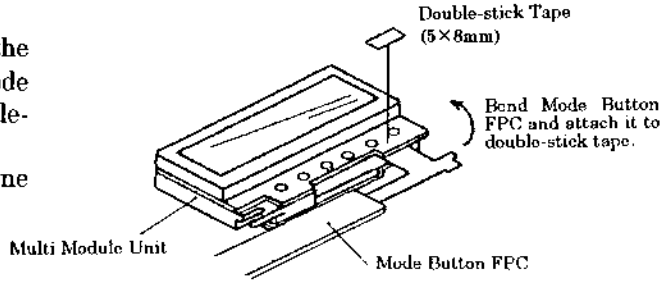


Fig.68

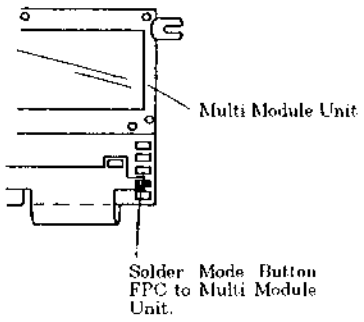


Fig.69

[Notes on Installation of Light Shield Rubber]

(Installation of Light Shield Rubber on Module Cover)

a) See to it that all the holes (×8) in the Light Shield Rubber (2DA21900) are fit correctly onto the inside guide pins (×8) of the Module Cover (2DA21400).

b) Install the Light Shield Rubber so that its cut side is positioned on the outside of the Module Cover.

(Inside View of Module Cover)

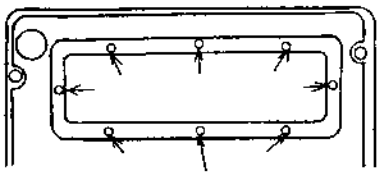


Fig.70

Fit the holes (×8) in Light Shield Rubber onto the guide pins (×8) of Module Cover.

(Outside View of Module Cover)

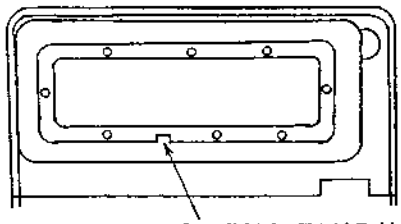


Fig.71

Install Light Shield Rubber so that the cut portion is positioned outside.

(Installation of Light Shield Rubber on Back Covering)

a) See to it that all the holes (×8) in the Light Shield Rubber are fit correctly onto the outside guide pins (×8) of the Back Covering (2DA21700).

b) Apply the bond (Cemedine 551) to the gap between the cut portion of the Light Shield Rubber and the Back Covering.

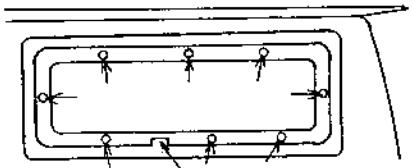
(Outside View of Back Covering)

Apply bond to the cut area of Light Shield Rubber.

Fig.72

Fit the holes (×8) in Light Shield Rubber onto the guide pins (×8) of Back Covering.

[Notes on Installation of Pressure Plate Base Ass'y]

(See Fig. 60)

* When installing the Pressure Plate Base Ass'y on the Back Cover, insert the three posts caulked to the Pressure Plate Base into the forks of the Lock Release Coupling Plate and two Base Guide Plates, respectively.

[Operation Check of Base Lock Plates (Upper) and (Lower)

(See Fig. 63)

* After reassembling the Back Cover (D) Ass'y, check the operation of the Base Lock Plate (Upper) and the Base Lock Plate (Lower) by the following procedure.
  If the Base Lock Plate (Upper) and Base Lock Plate (Lower) do not operate properly, the Base Lock Switch inside the Body does not turn ON and the Camera does not operate, with "00" blinking on the Display Panel.

(Operation Check Procedure)

1) Move the Release Lock Pawl downward.
2) Push the Lock Release Stop Lever with tweezers or the like.
3) Push the Base Lock Stop Plate with tweezers or the like and make certain that the Base Lock Plate (Upper) and Base Lock Plate (Lower) operate smoothly.
4) After operation check of Base Lock Plates (Lower) and (Lower). move the Release Lock Pawl to the lower position.

[Operation Check of Pressure Plate Base Ass'y]

(See Fig. 63)

* Make certain that the Pressure Plate Base Ass'y advances and returns smoothly.

[Check of Multi Module Unit Position]

* Once the Multi Module Unit (2DA2 4000) is removed, adjust the Multi Module Unit position.
  To adjust the position, loosen the Multi Module Unit Setscrews (66001025) × 2 and move the Multi Module Unit right and left.

(How to Check)

1) Press the Pressure Plate (D) Ass'y (2DAB3000) gently.
2) In this state, make certain that the center of the segment of the Multi Module Unit is positioned a little closer to the Film Roller than the center of the Imprinting Window of the Pressure Plate (D) Ass'y.

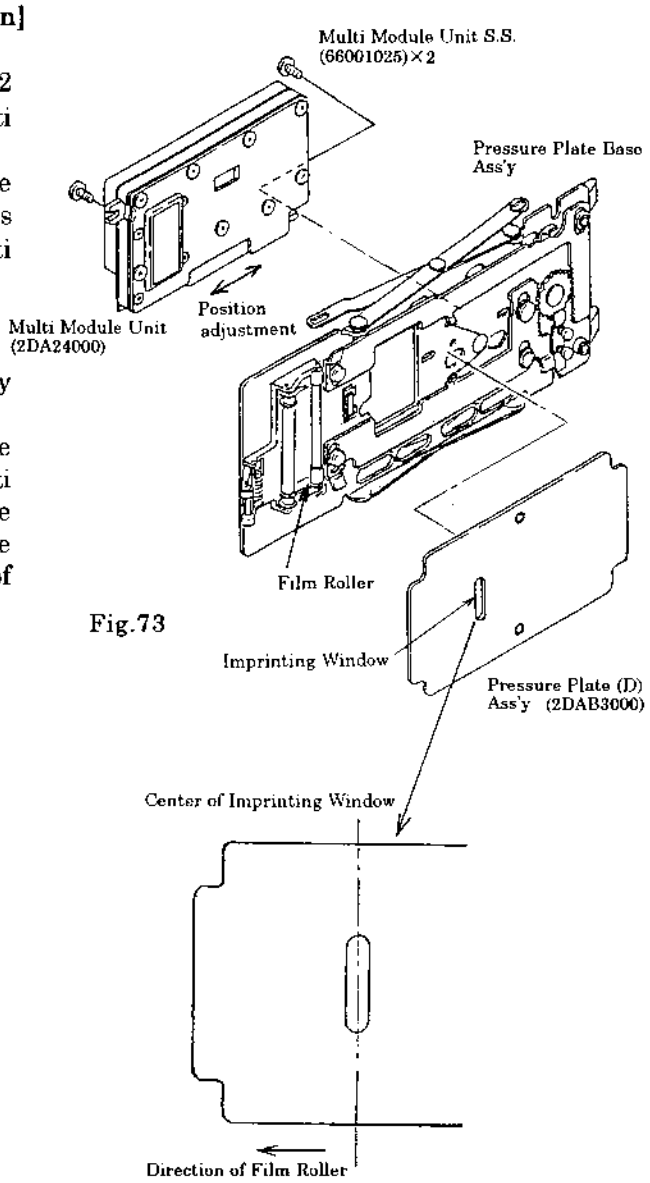


Fig.73

No.	419-01-50-RA1AF01

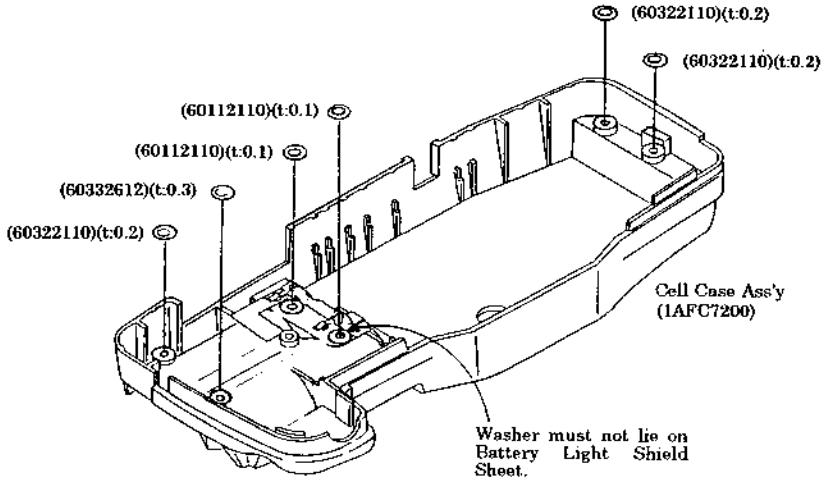
■ PARTS MODIFICATION LIST

[1] Addition of Attaching of Washer to Cell Case Screw Seat

In the camera at the early stage of production, 6 Washers are fixed to the inside of the Cell Case with the bond (Cemedine 551) as a tentative measure.
As the permanent measure, the screw seats inside the Cell Case will be modified and the Washers will be disused.

[Note on Repair]

a) Take care not to lose the Washers during repair.
If the Cell Case has been installed on the Body without any of the Washers, the Body Frame or Mount Base may be distorted and thus the accuracy of the flange back dimension can be deviated.



[2] Disuse of Static Electricity Prevention Board Ass'y

To ensure the required performance and to reduce the cost, the AF Circuit has been modified and the Static Electricity Prevention Board Ass'y (1AFE2000) has been disused. And a method of using one Aluminum Capacitor (5ECER1C10160*07) has been employed.

[Notes on Repair]

a) Install the Aluminum Capacitor in the Grip as shown at right. See the illustration at right for wiring.
b) Take due care, since there is no interchangeability between the camera with the Static Electricity Prevention Board Ass'y and the camera with the Aluminum Capacitor.
c) When the Mirror Box is replaced with a new Mirror Box Ass'y (with the modified AF Circuit), disuse the Static Electricity Prevention Board Ass'y and install the Aluminum Capacitor.

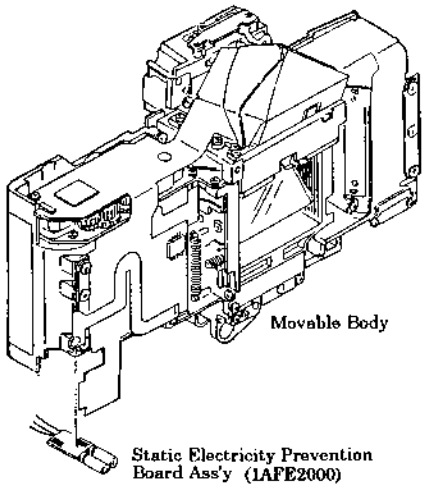
[Modification of AF Circuit]

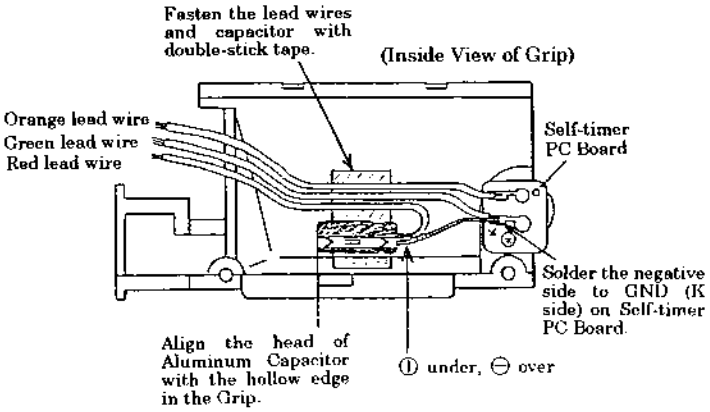
Tentative modification :

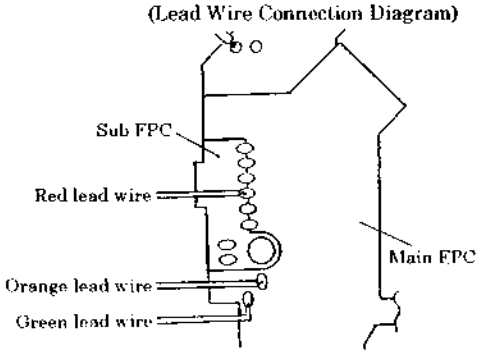
C301 (1 kΩ) on the AF FPC is disused and Orange lead wire is added.

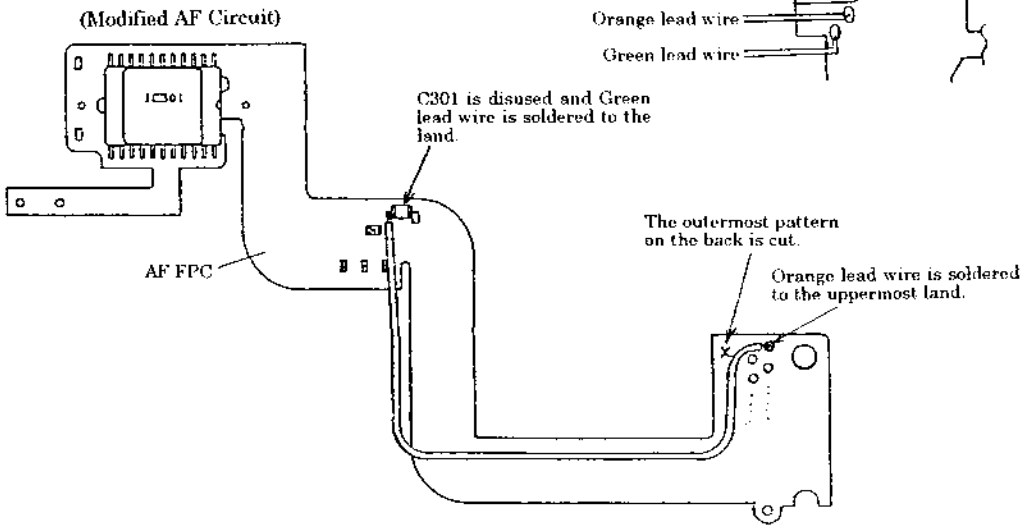
Permanent modification :

The pattern on AF FPC will be modified and the lead wire will be disused.



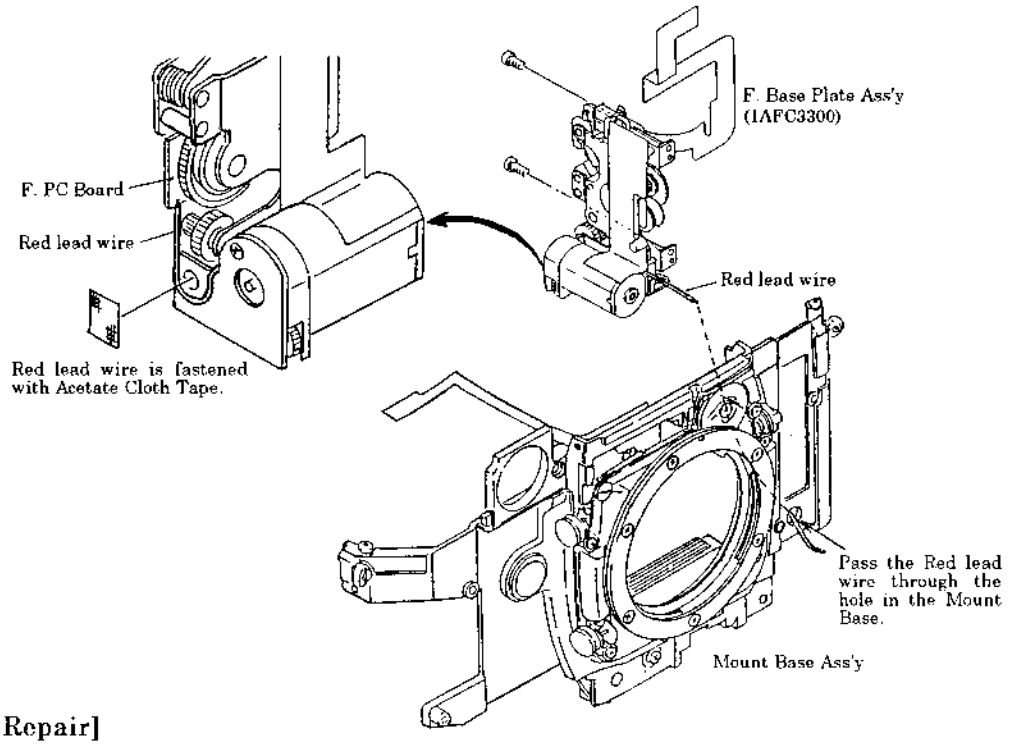

Fasten the lead wires and capacitor with double-stick tape.
(Inside View of Grip)
Orange lead wire
Green lead wire
Red lead wire
Self-timer PC Board
Solder the negative side to GND (K side) on Self-timer PC Board.
Align the head of Aluminum Capacitor with the hollow edge in the Grip.
⊕ under, ⊖ over




(Modified AF Circuit)
C301
C301 is disused and Green lead wire is soldered to the land.
The outermost pattern on the back is cut.
AF FPC
Orange lead wire is soldered to the uppermost land.

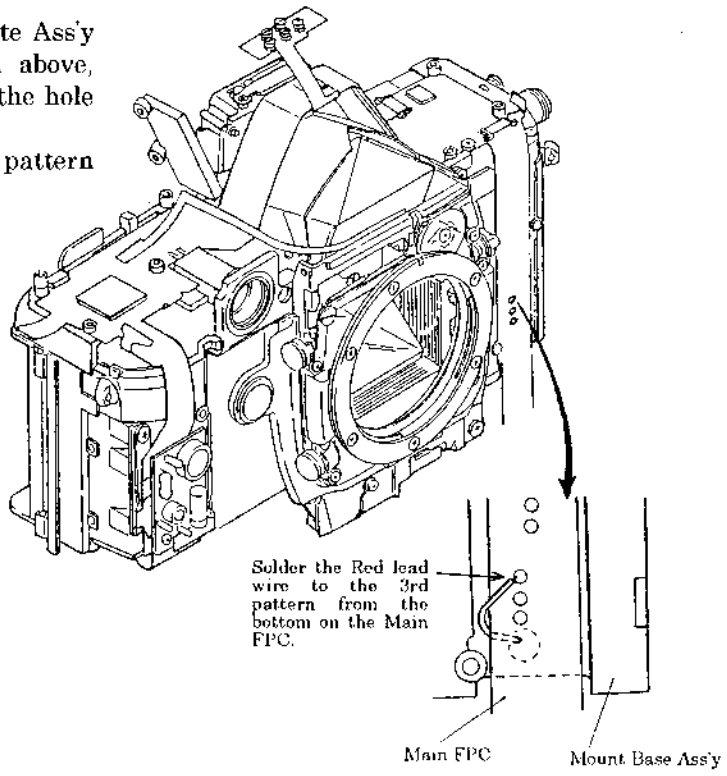
[3] Addition of F. PC Board

To prevent aperture charge overrunning, the F. PC Board has been added to the F. Base Plate Ass'y (1AFC3300).
As the permanent measure, the pattern on the Aperture FPC will be modified and the F. PC Board and the Red lead wire will be disused.


F. Base Plate Ass'y
(1AFC3300)
F. PC Board
Red lead wire
Red lead wire
Red lead wire is fastened with Acetate Cloth Tape.
Pass the Red lead wire through the hole in the Mount Base.
Mount Base Ass'y

[Notes on Repair]

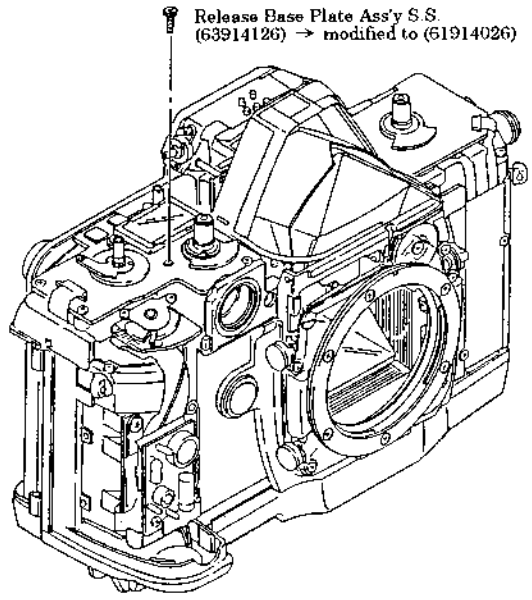
a) When installing the F. Base Plate Ass'y on the Mount Base, as shown above, pass the Red lead wire through the hole in the Mount Base.
b) Solder the Red lead wire to the pattern on the Main FPC.



[4] Modification of Release Base Plate Ass'y Setscrew

The head of the Release Base Plate Ass'y Setscrew (63914026) broke the resist for the land on the L. PC Board and caused a short circuit, so that CAF mode was unexpectedly switched to SAF mode. To prevent such trouble, the Release Base Plate Ass'y Setscrew has been modified.

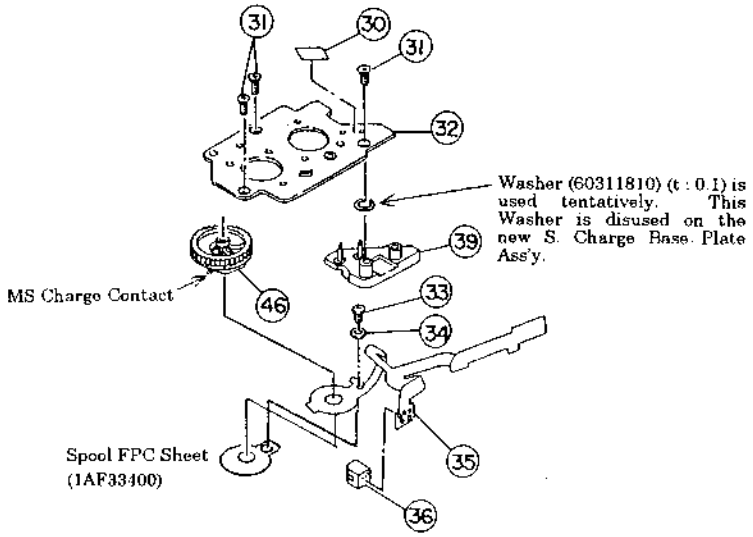
Part name : Release Base Plate Ass'y Setscrew
Old part number : 63914026
↓
New part number : 61914026



[5] Modification of Part of S. Charge Base Plate Ass'y

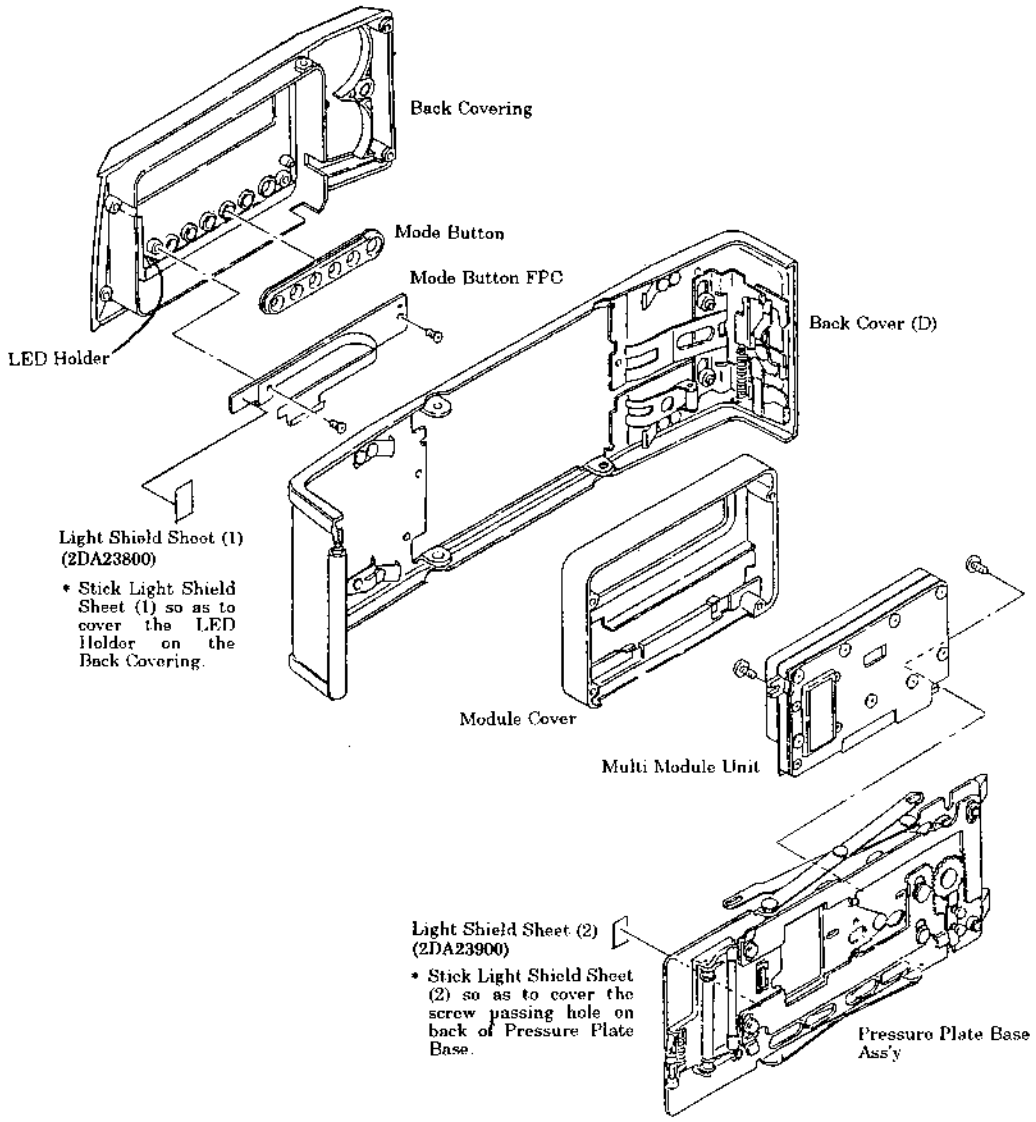
a) To ensure the correct contact of the MS Charge Contact, the Spool FPC Sheet (1AF33400) has been added.
   Please add this part to the Assembling Chart.
b) In the camera at the early stage of production, the Washer (60311810) (t : 0.1) is installed under the S. Charge Base Plate.

* Take care not to lose the Washer, if installed on the S. Charge Base Plate Ass'y.
* The Washer is not used on the new S. Charge Base Plate Ass'y.



[6] Addition of Parts to Back Cover (D) Ass'y (Data Back)

As shown below, the Light Shield Sheet (1) (2DA23800) and Light Shield Sheet (2) (2DA23900) have been added.
Please add these parts to the Assembling Chart.


Back Covering
Mode Button
Mode Button FPC
LED Holder
Back Cover (D)
Light Shield Sheet (1)
(2DA23800)
• Stick Light Shield Sheet (1) so as to cover the LED Holder on the Back Covering.
Module Cover
Multi Module Unit
Light Shield Sheet (2)
(2DA23900)
• Stick Light Shield Sheet (2) so as to cover the screw passing hole on back of Pressure Plate Base.
Pressure Plate Base Ass'y

[7] Change of Part Numbers in Assembling Chart

The following part numbers have been changed. Please correct the Assembling Chart.

Part Name	Part Number	New Part Number	Page of Chart	Item No. in Chart
DUBLE-STICK TAPE ↓ LIGHT SHIELD RUBBER TAPE (1)	*	 1AF45600	5	15
RW COUPLING SHAFT HOLDER (1)	1AF78410	1AF78300	8	10
POLYMIDE TAPE (1)	*	1AQ53600	8	18
MODE BUTTON FPC S.S	69113076	69213576	11	11
BACK COVERRING S.S	69113076	69113566	11	36
FILM ROLLER BASE ASS'Y S.S	69212566	69214066	11	51

C. ADJUSTMENT PROCEDURES, ETC.

C-1. ADJUSTMENTS OF MECHANISMS

C-1-1. Adjustment of Open Signal Contact Position

* Once the F. Ring Base Plate Ass'y (1AFC2800) is removed, adjust the position of the Open Signal Contact.

1) Loosen the Open F FPC Setscrews (66001009)×2.
2) Install the Planar F 1.4/50 Lens on the Mount Base.
3) Set the aperture of the lens to "F 1.4".
4) Adjust the position of the Open F FPC so that the Open Signal Contact is aligned with the triangle marks (▽).
5) Tighten the Open F FPC Setscrews (66001009)×2.

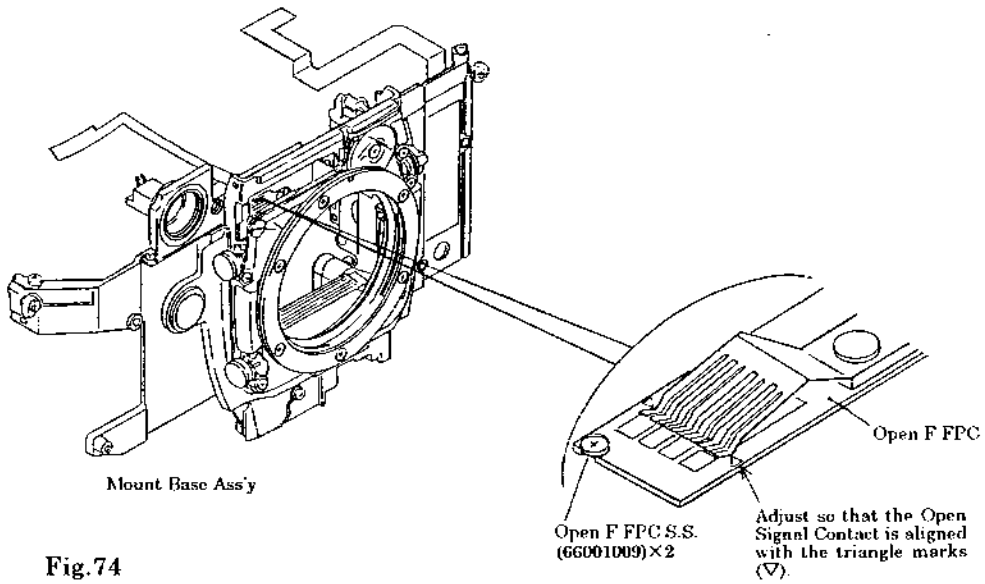

Mount Base Ass'y
Open F FPC
Open F FPC S.S.
(66001009)×2
Adjust so that the Open Signal Contact is aligned with the triangle marks (▽).

Fig.74

C-1-2. Adjustment of Viewfinder Indication Positions

* Place your eye at the center of the Eye-piece Lens and make adjustment so that all the indications (exposure counter, metering indicator, exposure compensation indicator, flash indicator, Back Focusing Scale, focus indicator, aperture value, exposure warning and shutter speed) can been seen without vignetting.

1) Remove the Eye-piece Lens Ass'y Setscrews (69216076)×2 and take off the Eye-piece Lens Ass'y (1AFF0300). (See Fig. 52)
2) Loosen the Finder LCD Ass'y Setscrews (63902526)×2.
3) Connect the Fixed Resistor (100Ω) to the (+) terminal of the regulated DC power supply.
4) Set the voltage of the regulated DC power supply to about 5.0V.
5) Connect the (+) terminal of the regulated DC power supply to the Red lead wire of the Finder LCD Ass'y and the (–) terminal to the Yellow lead wire.
6) Install the Eye-piece Lens Ass'y temporarily.
7) Turn ON the switch of the regulated DC power supply.
8) Look in the viewfinder through the Eye-piece Lens and adjust the position of indications in the viewfinder by moving the Finder LCD Ass'y (1AFF0200) up and down.
9) Remove the Eye-piece Lens Ass'y and tighten the Finder LCD Ass'y Setscrews.
   Lock the Finder LCD Ass'y Setscrews by applying the bond (Cemedine 551) to their heads.
10) Install the Eye-piece Lens Ass'y and tighten the Eye-piece Lens Ass'y Setscrews.

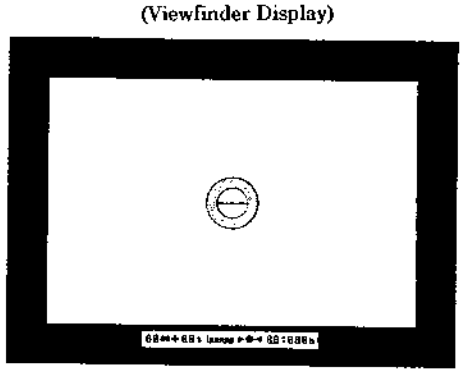


Fig.75

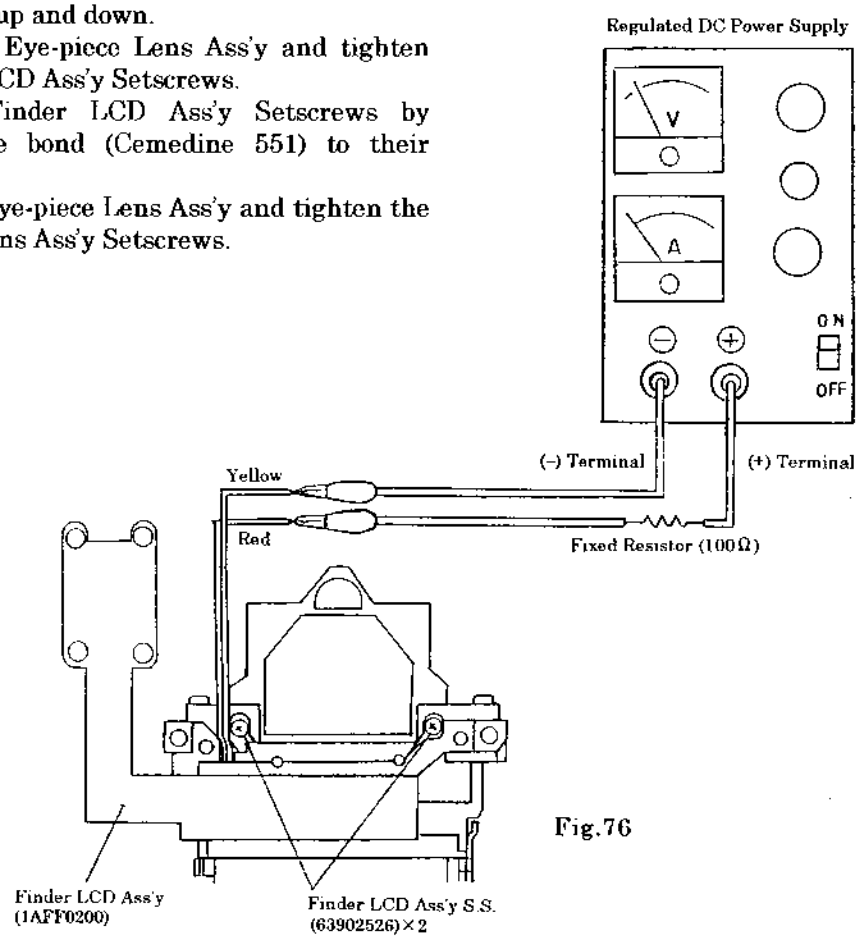


Fig.76

C-1-3. Adjustment of Spot Light Metering

* Adjust the position of the light metering sensor (SPD) to ensure correct spot light metering.
* Once the Eye-piece Lens Ass'y or the Light Metering FPC Ass'y is replaced, be sure to make this adjustment of spot light metering position.

(Tools for Adjustment)

- EF-500 or EF-8000 AE tester
- Planar F 1.4/50 Lens
- Black chart (to be prepared)

(Preparation of Chart)

- Prepare a chart of about 40 mm × 90 mm of low-reflectivity black paper.

(Preparation of Chart)

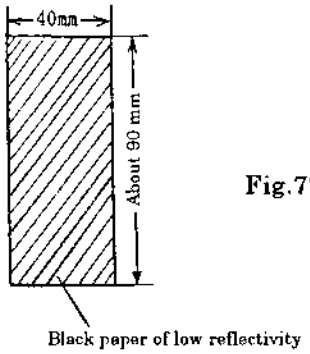


Fig.77

(Adjustment Procedure)

1) Loosen the Light Metering Base Retainer Setscrews (69313076)×2 slightly.
2) Install the Top Cover Ass'y temporarily.
3) Set the Planar F 1.4/50 Lens on the camera.
4) Set exposure mode to "Av".
5) Set the Metering Change Lever to the spot metering mark "◉".
6) Fix the black chart vertically to the light source surface of the AE tester (EF-500 or EF-8000) with Scotch tape.
7) Turn ON the switch of the AE tester and set the brightness to "LV 15".
8) Turn ON the Main Switch of the camera.

(Top View of Eye-piece Lens Ass'y)

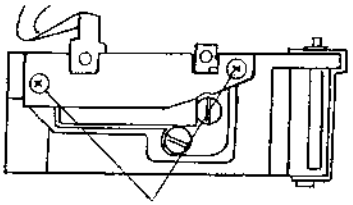


Fig.78

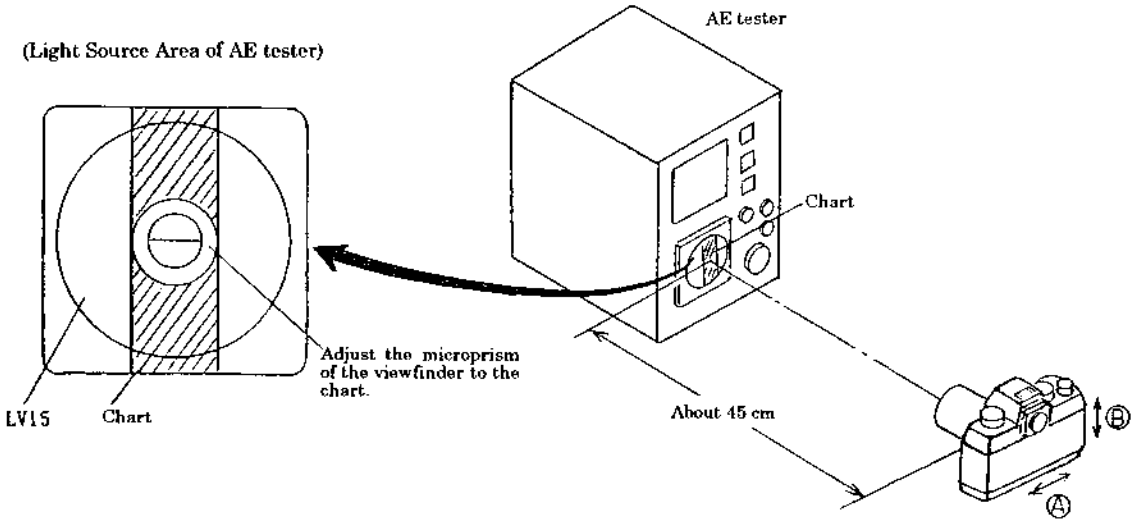


Fig.79

9) Set the camera where the distance from the black chart to the Mount Ring is about 45 cm and then focus the lens. In doing so, adjust the microprism area (about 5.0 mm in diameter) of the viewfinder to the side lines of the black chart rectangle.
10) Look into the viewfinder and swing the camera gently right and left (in the direction of the arrow Ⓐ). (See Fig.79)
Adjust by turning the Adjusting Screw ⓐ so that the shutter speed indicator shows the slowest speed at swinging. (See Fig.80)
* Remove the Top Cover Ass'y for this adjustment.
11) Repeat steps 9) and 10).
12) Remove the black chart and fix it with the long side of the rectangle in the horizontal position.
13) Set the camera where the distance from the black chart to the Mount Ring is about 45 cm and then focus the lens. In doing so, adjust the microprism area (about 5.0 mm in diameter) of the viewfinder to the side lines of the black chart rectangle.
14) Look into the viewfinder and swing the camera gently up and down (in the direction of the arrow Ⓑ). (See Fig.79)
Adjust by turning the Adjusting Screw ⓑ so that the shutter speed indicator shows the slowest speed at swinging. (See Fig.80)
* Remove the Top Cover Ass'y for this adjustment.
15) Repeat steps 13) and 14).
16) Tighten the Light Metering Base Retainer Setscrews (69313076)×2.
17) Lock the Light Metering Base with the bond (Cemedine 551) as shown below.

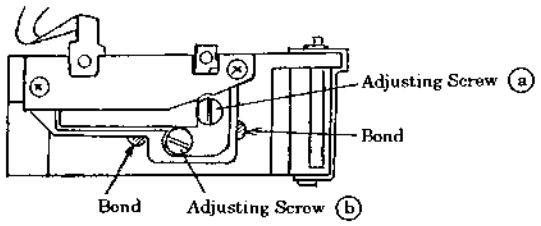


Fig.80

C-1-4. Adjustment of Flange Back Distance

(Tools for Adjustment)

- Digital dial gauge or linear scale
- Surface plate
- Mount stand
- 45.45 mm reference block
- Power Pack P-8

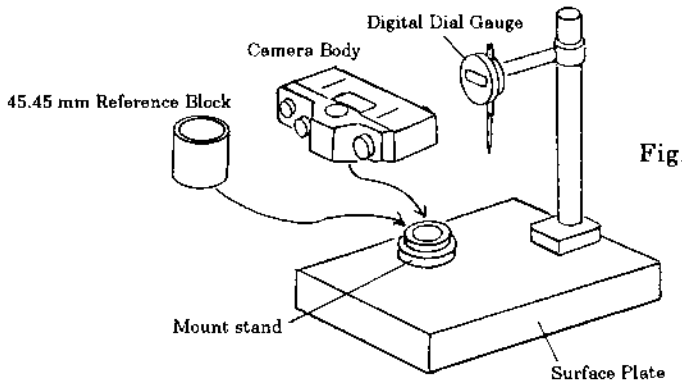


Fig.81

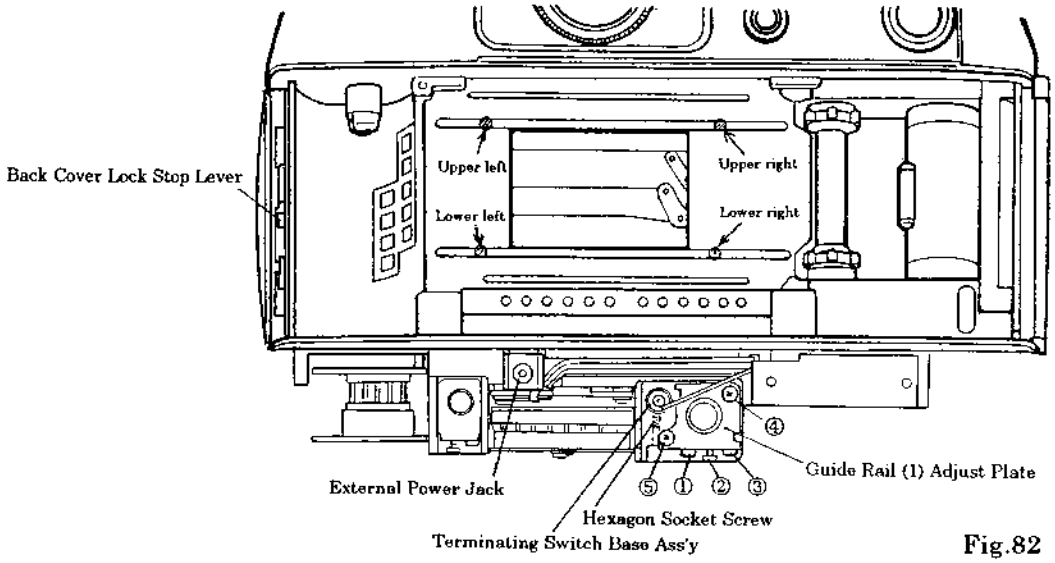


Fig.82

(1) Adjustment of Parallelism

1) Remove the Back Cover Ass'y.
2) Remove the Cell Case Ass'y.
3) Insert the plug at the end of the cable of the Power Pack P-8 into the External Power Jack of the camera body. And when the Movable Body has been driven to a middle position (an appropriate position), pull out the plug of the cable of the Power Pack P-8 from the External Power Jack of the camera body.
4) Install the mount stand on the camera body and place it on the surface plate.
5) Bring the measuring spindle of the digital dial gauge into contact with the film-side rail surface (for example, at a point on the lower right side of the aperture) and reset the reading of the gauge to zero.
6) Measure the level of the film-side rail surface at other points (for example, on the lower left, upper right and upper left sides of the aperture).
7) Loosen the screws ④ and ⑤ of the Guide Rail (1) Adjust Plate and adjust the inclination of the film-side rail surface.
   - Loosen the screw ① and tighten the screw ③ to lower the left side of the rail surface.
   - Loosen the screw ③ and tighten the screw ① to lower the right side of the rail surface.
   - Loosen the screws ① and ③ and tighten the screw ② to raise the upper side of the rail surface.
8) When the level has been adjusted to within a tolerance of "0.03", tighten the screws ④ and ⑤.

(2) Adjustments of 45.45 mm and 55.45 mm distance

[Adjustment Procedure for 45.45 mm distance]

1) Place the mount stand on the surface plate for flange back. Place the 45.45 mm reference block on the mount stand.
2) Bring the measuring spindle of the digital dial gauge into the 45.45 mm reference block and reset the reading of the digital dial gauge to zero.
3) Remove the 45.45 mm reference block from the surface plate.
4) Set the Back Cover Lock in the close position. (Push the Back Cover Lock Stop Lever of the Back Cover Lock Plate Ass'y with tweezers or the like.)
5) Insert the plug at the end of the cable of the Power Pack P-8 into the External Power Jack of the camera body and set the Movable Body in the MF position.

   Note :

   - If the Movable Body does not move and thus is not set in the MF position, unplug the cable of the Power Pack P-8 and press the Check Switch. Then again insert the plug of the cable of the Power Pack P-8 into the External Power Jack of the camera body and set the Movable Body in the MF position.

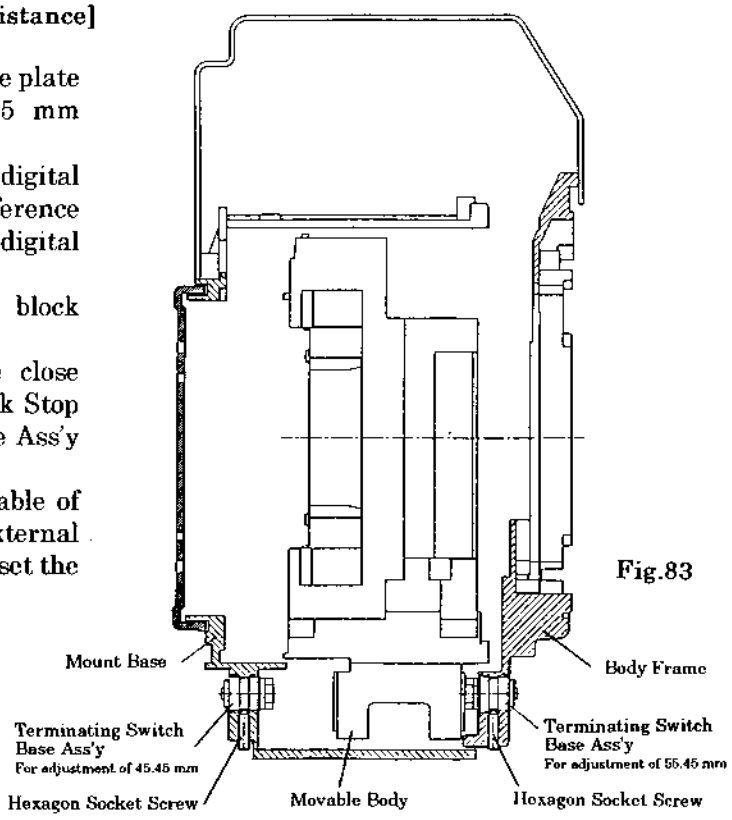


Fig.83

6) Pull out the plug of the cable of the Power Pack P-8 from the External Power Jack of the camera body.
7) Install the mount stand on the camera body and place it on the surface plate.
8) Bring the measuring spindle of the digital dial gauge into contact with the film-side rail surface at its points on the lower right, lower left, upper right and upper left sides of the aperture. Thus measure the flange back for 45.45 mm.
9) If the flange back is found out of the tolerance, adjust by the following procedure :

   Standard value : 45.45±0.05 mm

10) Loosen the Hexagon Socket Screw (66001136) for the Mount Base Ass'y.
11) Make adjustment by turning the slit position of the Terminating Switch Base Ass'y (1AFE0800), using tweezers.
12) Tighten the Hexagon Socket Screw.
13) Slide the Back Cover Release Lever while pressing the Back Cover Lock Button of the Back Cover Lock Plate Ass'y.
14) Insert the plug at the end of the cable of the Power Pack P-8 into the External Power Jack of the camera body, pull it out and again insert it to drive the Movable Body.
15) Make adjustment again by repeating steps 4) to 12) above.

[Adjustment Procedure for 55.45 mm distance]

1) Set the Back Cover Lock in the open position. (Slide the Back Cover Release Lever while pressing the Back Cover Lock Button of the Back Cover Lock Plate Ass'y.)
2) Insert the plug at the end of the cable of the Power Pack P-8 into the External Power Jack of the camera body and set the Movable Body in the MACRO position.
3) Pull out the plug of the cable of the Power Pack P-8 from the External Power Jack of the camera body.
4) Install the mount stand on the camera body and place it on the surface plate.
5) Bring the measuring spindle of the digital dial gauge into contact with the film-side rail surface at its points on the lower right, lower left, upper right and upper left sides of the aperture. Thus measure the flange back for 55.45 mm.
6) If the flange back is found out of the tolerance, adjust by the following procedure :

   Standard value : 55.45±0.05 mm

7) Loosen the Hexagon Socket Screw (66001136) for the Body Frame Ass'y.
8) Make adjustment by turning the slit position of the Terminating Switch Base Ass'y (1AFE0800), using tweezers.
9) Tighten the Hexagon Socket Screw.
10) Insert the plug at the end of the cable of the Power Pack P-8 into the External Power Jack of the camera body, pull it out and again insert it to drive the Movable Body.
11) Make adjustment again by repeating steps 4) to 9) above.

[Final Check]

1) Install the Cell Case Ass'y and tighten the Cell Case Ass'y Setscrews.
2) Make certain that the parallelism of the film-side rail surface and 45.45 mm of flange back distance are within the tolerance.

C-1-5. Adjustment of Viewfinder Focusing

[Rough Adjustment of Viewfinder Focusing]

* For adjustment, replace the washers under the Penta Prism Holder. (See Fig. 52)

① If focusing is not achieved even when the focus ring is turned to the infinity position
- The finder back is too long, so shorten (lower) the position of the focusing plate.

② If focusing occurs before the focus ring is turned to the infinity position
- The finder back is too short, so lengthen (raise) the position of the focusing plate.

Note :
- When checking viewfinder focusing, set the Back Cover Lock in the close position. (Push the Back Cover Lock Stop Lever of the Back Cover Lock Plate Ass'y with tweezers or the like.) Then load the battery and set the Movable Body in the MF position.

[Fine Adjustment of Viewfinder Focusing]

* Use the adjusting screw in the Mirror Box only when adjusting the Lens travel within 0.1 mm (±1/4 of the "∞" mark) with the standard lens Planar F 1.4/50 mounted.
  Do not turn the adjusting screw by more than 3/4 turn.
* When the adjustment of viewfinder focusing has been made by use of the adjusting screw in the Mirror Box, be sure to operate the shutter several times and make certain that viewfinder focusing is proper.
* Upon completion of the adjustment, apply the mat paint and fix with the bond (Cemedine 551).
* After the fine adjustment of viewfinder focusing, make the adjustment of auto focusing (Adjustments of Compensation Values A to F).

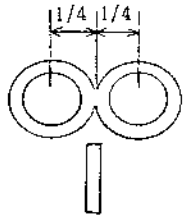


Fig.84

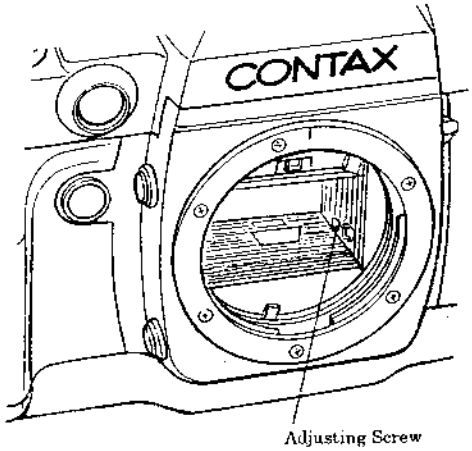


Fig.85

C-2. ADJUSTMENTS OF COMPENSATION VALUES (MANUAL ADJUSTMENTS)

* This camera permits the adjustments of compensation values (adjusted values) by its manual operation only. Therefore, adjustments can be made without communication with any special adjusting tools.

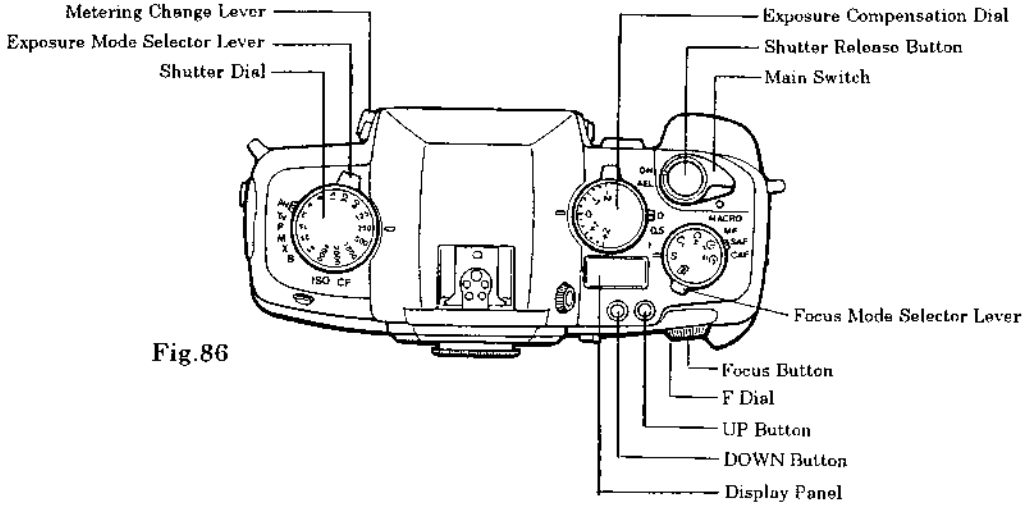


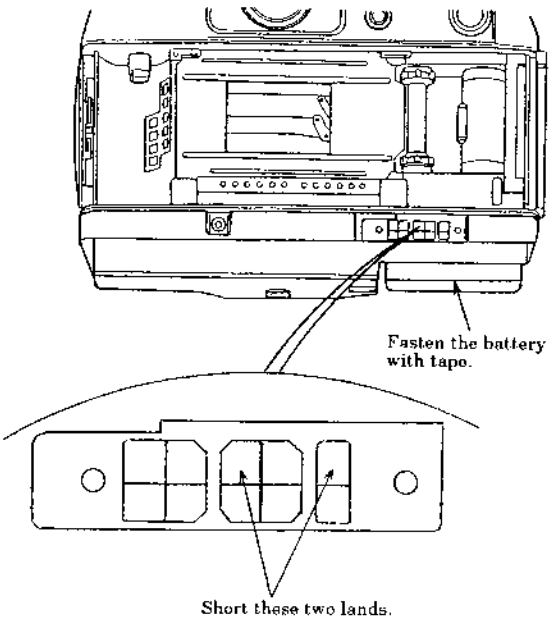
Fig.86

[Setting of Manual Adjusting Mode and Return to Normal Mode]

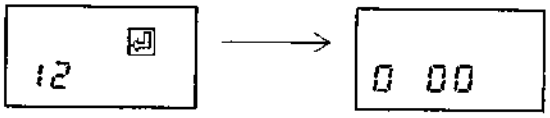
① Remove the Bottom Cover Ass'y (1AFD0900).
② Remove the Test Terminal Cover Setscrew (61913529) and take off the Test Terminal Cover (1AF27100). (See Fig. 19)
③ Set the battery (2CR5) in the camera body.
Note :
- Fasten the battery with tape or the like ; otherwise, it can easily come off.

④ Turn ON the Main Switch and short the specified two of the test terminal lands to set the manual adjusting mode.
⑤ At transition to the manual adjusting mode, the display on the Display Panel changes as shown below, indicating that the manual adjusting mode has been set. At this point, the Viewfinder LCD will go out.

Fig.87



Display on Display Panel



Normal Mode (Example)

Manual Adjusting Mode (Initial State)

⑥ To return to the normal mode, turn OFF the Main Switch or remove the battery.

[Selection of Manual Adjustment Item]

In the manual adjusting mode, set the Main Switch in the "ON" position and select an adjustment item by combining the setting position of the Focus Mode Selector Lever and the press of the UP or DOWN Button. The selected item can be checked by a combination of the setting position of the Focus Mode Selector Lever and the 4th digit of the 7-segment display or symbol indication (ISO or EX) on the Display Panel.

① Selection of Item Major Code

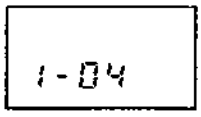
Select an item major code by setting the Focus Mode Selector Lever. See the following for the relationship between the setting positions of the Focus Mode Selector Lever and the item major codes.

Setting Position of Focus Mode Selector Lever	Item Major Code
MACRO	A
MF	B
SAF	C
CAF	D

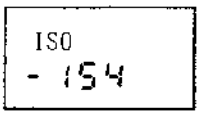
② Selection of Item Minor Code

An item minor code is represented by the 4th digit of the 7-segment display or symbol indication (ISO or EX) on the Display Panel. The 4th digit of the 7-segment display is expressed by one of the hexadecimal numbers of 0~F.
With the Main Switch set in the "ON" position, press of the UP or DOWN Button will change the item minor code. The pattern of change is as shown below. Press of the DOWN Button at 0 or press of UP Button at EX will not change the item minor code. Press of UP or DOWN Button for more than 1.2 seconds will change the item minor code at such a high rate as 4 times per second.

UP
0 ⇄ 1 ⇄ · · · · · ⇄ E ⇄ F ⇄ ISO ⇄ EX
DOWN



When item minor code is 1

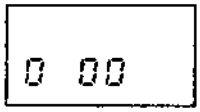


When item minor code is ISO

At item C-d, as an exception, all the indications on the Display Panel light up as shown below. (The appearing of this display state signifies the selection of item C-d.)

In the state of item C-d (all indications lighting)

In the initial state after transition to the manual adjusting mode or after switching of the item major code, the item minor code is 0. In this state, the 4th digit of the 7-segment display on the Display Panel is 0, the 3rd digit position is blank, 2nd and 1st digits are both 0.



Initial state in manual adjusting mode or after switching of item major code

[Manual Adjustment Items and Their Description]

Table 1 below shows the manual adjustment items and their description. This table contains also the adjustment items to be used only in the manufacturing process. That is, not all the adjustment items given here are to be used in repair or adjustments on the service station. The modes contained here will be described in the next section "Operations in Manual Adjustments".

Table 1 Manual Adjustment Items and Their Description (1)

Item		Description (Mode)		Unit of Adjusted Value	Range of Adjusted (Displayed) Value
A-0		Writing in EEPROM		—	00 (blinking at writing of adjusted value)
A-1	Output adjustments	Shutter time	I	6.4 μs	-26~27 (-166.4~172.8 μs)
A-2		Adjusted value 1 for average light metering	I	1/8Lv	-20~20 (-2.5~2.5Lv)
A-3		Adjusted value 2 for average light metering	I	1/8Lv	-20~20 (-2.5~2.5Lv)
A-4		Adjusted value 1 for spot light metering	I	1/8Lv	-28~28 (-3.5~3.5Lv)
A-5		Adjusted value 2 for spot light metering	I	1/8Lv	-28~28 (-3.5~3.5Lv)
A-6		Aperture delay pulse 1	I	1/16 Av (1 pulse)	-20~20 (-20~20 pulses)
A-7		Aperture delay pulse 2	I	1/16 Av (1 pulse)	-20~20 (-20~20 pulses)
A-8		Aperture delay pulse 3	I	1/16 Av (1 pulse)	-20~20 (-20~20 pulses)
A-9		TTL Flash Auto light exposure	I	1/3Ev	-03~06 (-1~2Ev)
A-A		Aperture reverse run brake time	I	1.25msec	-16~16 (0~40msec)
A-b		Adjusted value of imprinting time *5	I	17msec	-02~03 (0~102msec)
A-c		Compiled data imprinting feed brake time	I	409.6 μs	-05~42 (409.6 μs ~19.66ms)
A-d		Adjusted value for AF best image *1	I	1/256mm	-99~99 (-0.39~0.39mm)
A-E		Adjusted value for SAF in-focus width	I	3.9 μm	-09~99 (-35.1~386.1 μm)
A-F		AF adjusted value	I	1/128 pitch	-99~99 (-0.77~0.77 pitch)
A-ISO		AF adjusted value (monitor adjustment)	IV	1/128 pitch	-999~999 (Displayed Value)
A-EX		Not used		—	00
B-0		Writing in EEPROM		—	00 (blinking at writing of adjusted value)
B-1	Output adjustments	Battery check L0	I	18.4mV *2	-20~20 (Reference voltage 4.2 V)
B-2		Battery check L1	I	18.4mV *2	-20~20 (L0+14DEC)
B-3		Battery check L2	I	18.4mV *2	-20~20 (Reference voltage 3.9 V)
B-4		Battery check L3	I	18.4mV *2	-20~20 (Reference voltage 5 V)
B-5		Adjusted value for temperature	I	1℃ *3	-51~51
B-6		Adjusted value for temperature (monitor adjustment)	IV	1℃ *3	-99~99 (Displayed Value)
B-7		Adjusted value for Body position indication	I	0.01mm	-99~99 (-0.99~0.99mm)
B-8		Adjusted value for MF in-focus width	I	3.9 μm	-09~99 (-35.1~386.1 μm)
B-9		Adjusted value for CAF in-focus width	I	3.9 μm	-09~99 (-35.1~386.1 μm)
B-A		Adjusted value for contrast judgment	I	--	-99~99
B-b		Adjusted value for defocus sensitivity	I	1.9 μm	-99~99 (-188.1~188.1 μm)
B-c		Adjusted value 1 for aperture control	I	1.25ms	-99~99 (98.75~148.75ms)
B-d		Adjusted value 2 for aperture control	I	1.25ms	-99~99 (-140~107.5ms)
B-E		Not used		--	00
B-F		Not used		—	00
B-ISO		Not used		—	00
B-EX		Not used		--	00

*1 Adjustment of correlation of in-focus state on the viewfinder with actual in-focus state. Usually 0.

*2 Change in battery voltage relative to the adjusted value 1 at 25℃.

*3 Change in temperature relative to the adjusted value 1 at 25℃.

*5 In the case of ISO100.

Table 1 Manual Adjustment Items and Their Description (2)

Item		Description (Mode)		Unit of Adjusted Value	Range of Adjusted (Displayed) Value
C-0		Writing in EEPROM		–	00 (blinking at writing of adjusted value)
C-1	Input adjustments	Adjusted value A for shutter resistance	I	1/256VREF	-16~ 40
C-2	Input adjustments	Adjusted value B for shutter resistance	I	1/256VREF	-40~ 15
C-3	Input adjustments	Adjusted value A for exposure compensation resistance	I	1/256VREF	-40~ 40
C-4	Input adjustments	Adjusted value B for exposure compensation resistance	I	1/256VREF	-40~ 23
C-5	Input adjustments	Adjusted value A for aperture resistance	I	1/256VREF	-13~ 40
C-6	Input adjustments	Adjusted value B for aperture resistance	I	1/256VREF	-40~ 40
C-7		Not used		–	00
C-8		Not used		–	00
C-9		Not used		–	00
C-A		Not used		–	00
C-b		Not used		–	00
C-c	Special	Indication of ROM version	VI	–	ROM version
C-d	Special	All indications lighting on Display Panel	VI	–	All indications lighting
C-E	Special	All indications lighting in viewfinder	VI	–	00
C-F	Special	All data erasure in EEPROM	VI	–	00 (blinking during all data erasure)
C-ISO	Output	Adjusted value for frequency limit on high speed side	V	16Hz	9d~ 63 (-99~99)
C-EX	Output	Adjusted value for frequency limit on low speed side	V	16Hz	9d~ 63 (-99~99)
D-0		Writing in EEPROM		–	00 (blinking at writing of adjusted value)
D-1	Semiautomatic	Semiautomatic adjustment of shutter resistance	II	1/256VREF	A : -12~20 B : -20~12
D-2	Semiautomatic	Semiautomatic adjustment of exposure compensation resistance	II	1/256VREF	A : -20~20 B : -20~20
D-3	Semiautomatic	Semiautomatic adjustment of aperture resistance	II	1/256VREF	A : -12~20 B : -20~20
D-4	Indication	Indication of shutter resistance	III	1/256VREF	00~ FF
D-5	Indication	Indication of exposure compensation resistance	III	1/256VREF	00~ FF
D-6	Indication	Indication of aperture resistance	III	1/256VREF	00~ FF
D-7	Indication	Indication of average light metering	III	1/8Lv	20~ F8 (-5LV~22LV) *4
D-8	Indication	Indication of spot light metering	III	1/8Lv	20~ F8 (-5LV~22LV) *4
D-9	Indication	Indication of no-load battery check	III	18.4mV *2	00~ FF (2.4V~7.12V)
D-A	Indication	Indication of loaded battery check	III	18.4mV *2	00~ FF (2.4V~7.12V)
D-b	Indication	Indication of temperature	III	1℃	-99~ 99 (-99℃~99℃) *4
D-c	Indication	Shots counter 3	III	1024 shots	00~ 99 (0~101,376 shots)
D-d	Indication	Shots counter 2	III	256 shots	00~ 03 (0~1,023 shots)
D-E	Indication	Shots counter 1	III	1 shot	00~ FF (0~255 shots)
D-F	Indication	Error code	III	–	See Page.C-23
D-ISO	Indication	Indication of defocus value	III	1/256 pitch	8000~ 7FFF (-128~128 pitches)
D-EX	Indication	Indication of drive speed	III	1/64 pulse/ms	00~ FF (0~4 pulses/ms)

*2 Change in battery voltage relative to the adjusted value 1 at 25℃.

*4 Indication of A/D conversion result (00H ~ FFH) is also allowed by changing the switch position.

[Operations in Manual Adjustments]
The manual adjustment items are classified into several modes by setting operation and purpose. See the following for the operations in manual adjustments in each mode.

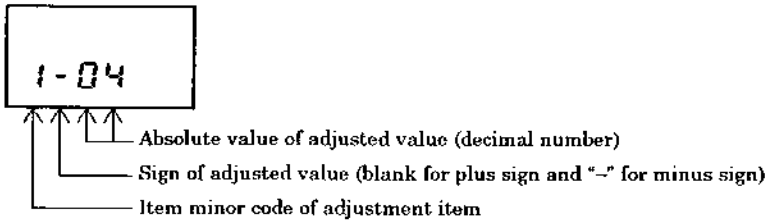
(I) Adjusted Value Setting Mode

Items : A-1~F, B-1~5, 7~d, C-1~6

Adjusted Value Setting Mode is used to set adjusted values by means of the UP and DOWN Buttons. Perform the writing of the set values in EEPROM at item A-0, B-0, C-0 or D-0.

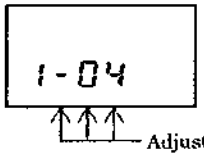
(1) Display in adjusting mode

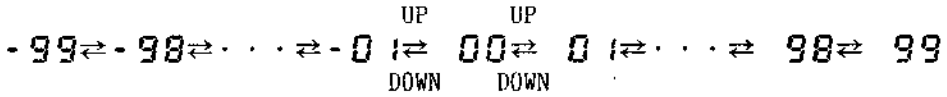
The adjusted value for the selected item is displayed at the 3rd, 2nd and 1st digit positions on the Display Panel. Adjusted values are displayed by a decimal number with a sign. At the 3rd digit position, a blank space is left to indicate the plus sign and a symbol "–" is displayed to indicate the minus sign. At the 2nd and 1st positions, the absolute value is displayed. The range of displayed values is 00 ~ 99.


1-04
Absolute value of adjusted value (decimal number)
Sign of adjusted value (blank for plus sign and "–" for minus sign)
Item minor code of adjustment item

(2) Change of adjusted value

To change the adjusted value, set the Main Switch in the "AEL" position and press the UP or Down Button. Use the UP Button to increment the value or DOWN Button to decrement the value. The lower limit value and upper limit value of the adjusted value vary with the adjustment item. The adjusted value will not change by press of the DOWN Button at the lower limit or press of the UP Button at the upper limit. Press of UP or DOWN Button for more than 1.2 seconds will change the adjusted value at such a high rate as 4 times per second.



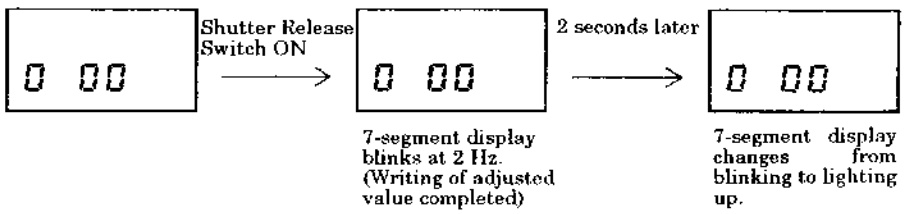


* When the lower limit is -99 and the upper limit is 99

(3) Storage of adjusted value (writing in EEPROM)

The changed adjusted value will not be written in EEPROM only by the operation of (2). To write the adjusted value in EEPROM, select item A-0, B-0, C-0 or D-0. These items, unlike other items, indicate the writing of changed adjusted values in EEPROM. Turn ON the Shutter Release Switch, and the set adjusted values will be written in EEPROM. The 7-segment display will blink at 2 Hz for two seconds to indicate the execution of writing. The adjusted values of all the items are written together at a time.

* To select item A-0, B-0, C-0 or D-0, change the position of the Focus Mode Selector Lever to another mode. Then the display 0 00 will appear to permit writing in EEPROM.


0 00
Shutter Release Switch ON
0 00
2 seconds later
0 00
7-segment display blinks at 2 Hz. (Writing of adjusted value completed)
7-segment display changes from blinking to lighting up.

(II) Semiautomatic Adjustment Mode

Item : D-1~3

Use this mode to adjust semiautomatically the relationship between the setting positions of Dials and A/D converted values.

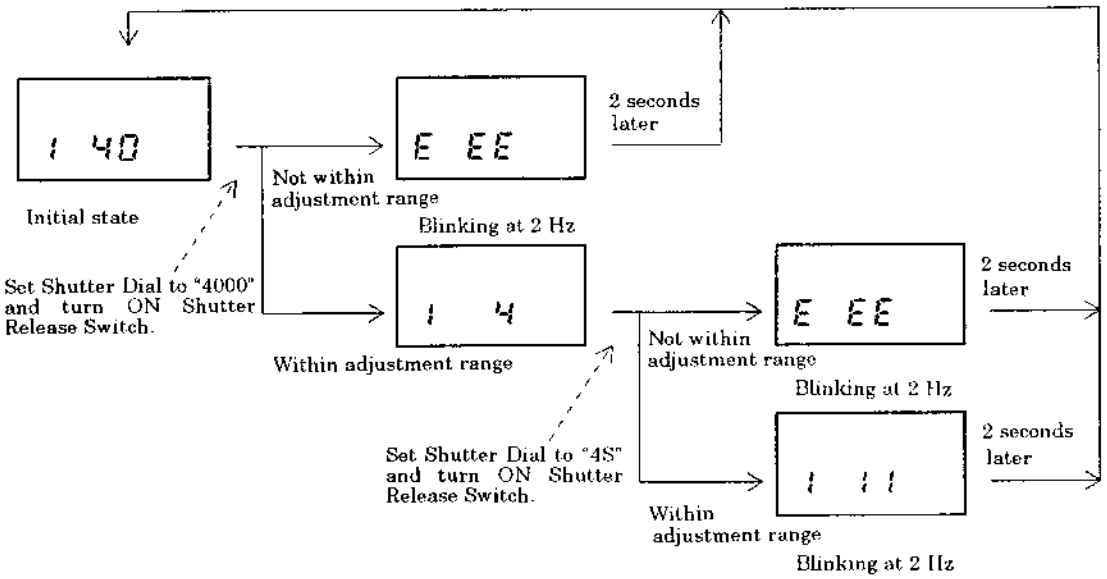
D-1. Semiautomatic Adjustment of Shutter Resistance

Make this adjustment to set the adjusted values A and B for the shutter resistance.

① In the manual adjusting mode, select the adjustment item D-1. In the initial state, the 7-segment display will indicate 1 40.

② Set the Shutter Dial in the "4000" position and turn ON the Shutter Release Switch. The voltage from the shutter resistor will be A/D converted and the adjusted value A for the shutter resistance will be obtained.
When the adjusted value A for shutter resistance is within the adjustment range, the display will change to 1 4. If the adjusted value is not within the adjustment range, the display will indicate E EE, blinking at 2 Hz, for two seconds and then returns to the initial state.

③ With the display indicating 1 4, set the Shutter Dial in the "4S" position and turn ON the Shutter Release Switch. The voltage from the shutter resistor will be A/D converted and the adjusted value B for the shutter resistance will be obtained.
When the adjusted value B for the shutter resistance is within the adjustment range, the adjusted values A and B for the shutter resistance will be written in EEPROM. The display will indicate 1 1, blinking at 2 Hz, for two seconds to show the execution of writing and then returns to the initial state. If the adjusted value is not within the adjustment range, the display will indicate E EE, blinking at 2 Hz, for two seconds and then returns to the initial state.



※ Reference ---------- How to Obtain Adjusted Values for Shutter Resistance

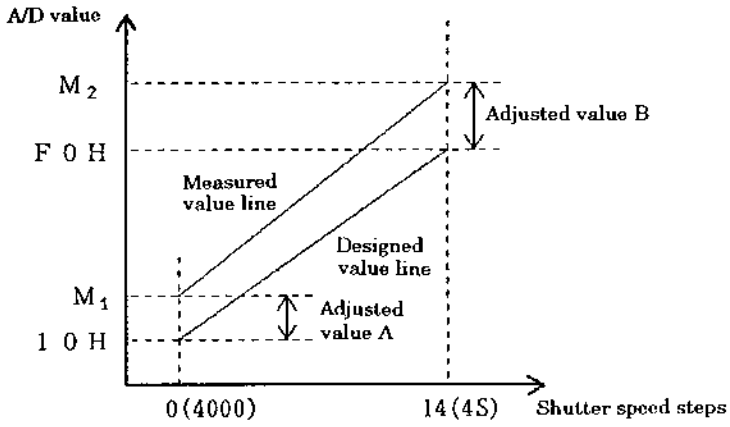
Let M_1 be the A/D converted value obtained when the Shutter Dial is set in the "4000" position and M_2 be the A/D converted value obtained when the Shutter Dial is set in the "4S" position. Then each adjusted value is obtained as follows :

① The designed value for the A/D converted value obtained when the Shutter Dial is set in the "4000" position is 10 (hexadecimal). The adjusted value A is calculated from the following formula :

Adjusted value A = M_1 – 10 (hex.) ---------- (1)

② The designed value for the A/D converted value obtained when the Shutter Dial is set in the "4S" position is 10 (hexadecimal). The adjusted value B is calculated from the following formula :

Adjusted value B = M_2 – F0 (hex.) ---------- (2)



The ranges of adjusted values A and B for shutter resistance are as shown below. With values out of these ranges, the adjustment is impossible.

Adjusted value A for shutter resistance : – 12 ~ 20
Adjusted value B for shutter resistance : – 20 ~ 12

| Adjusted value A – Adjusted value B | < 20

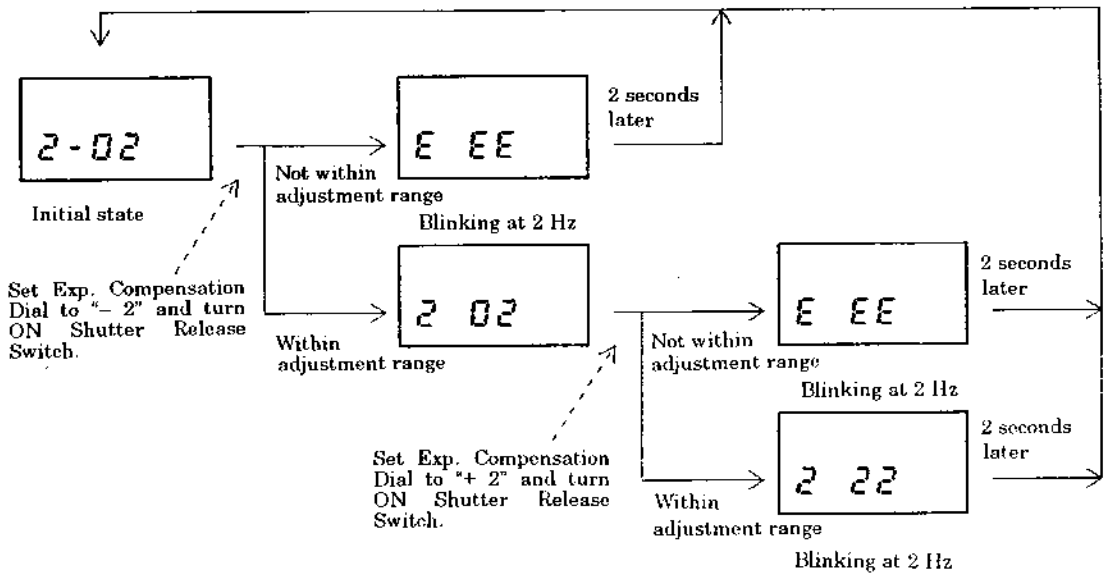
D-2. Semiautomatic Adjustment of Exposure Compensation Resistance

Make this adjustment to set the adjusted values A and B for the exposure compensation resistance.

① In the manual adjusting mode, select the adjustment item D-2. In the initial state, the 7-segment display will indicate 2 - 02 .

② Set the Exposure Compensation Dial in the "– 2" position and turn ON the Shutter Release Switch. The voltage from the exposure compensation resistor will be A/D converted and the adjusted value A for the exposure compensation resistance will be obtained.
When the adjusted value A for exposure compensation resistance is within the adjustment range, the display will change to 2 20. If the adjusted value is not within the adjustment range, the display will indicate E EE, blinking at 2 Hz, for two seconds and then returns to the initial state.

③ With the display indicating 2 02, set the Exposure Compensation Dial in the "+ 2" position and turn ON the Shutter Release Switch. The voltage from the exposure compensation resistor will be A/D converted and the adjusted value B for the exposure compensation resistance will be obtained.
When the adjusted value B for the exposure compensation resistance is within the adjustment range, the adjusted values A and B for the exposure compensation resistance will be written in EEPROM. The display will indicate 2 22, blinking at 2 Hz, for two seconds to show the execution of writing and then returns to the initial state. If the adjusted value is not within the adjustment range, the display will indicate E EE, blinking at 2 Hz, for two seconds and then returns to the initial state.


2-02
Initial state
E EE
Not within adjustment range
Blinking at 2 Hz
2 seconds later
Set Exp. Compensation Dial to "– 2" and turn ON Shutter Release Switch.
2 02
Within adjustment range
E EE
Not within adjustment range
Blinking at 2 Hz
2 seconds later
Set Exp. Compensation Dial to "+ 2" and turn ON Shutter Release Switch.
2 22
Within adjustment range
Blinking at 2 Hz
2 seconds later

※ Reference --- How to Obtain Adjusted Values for Exposure Compensation Resistance

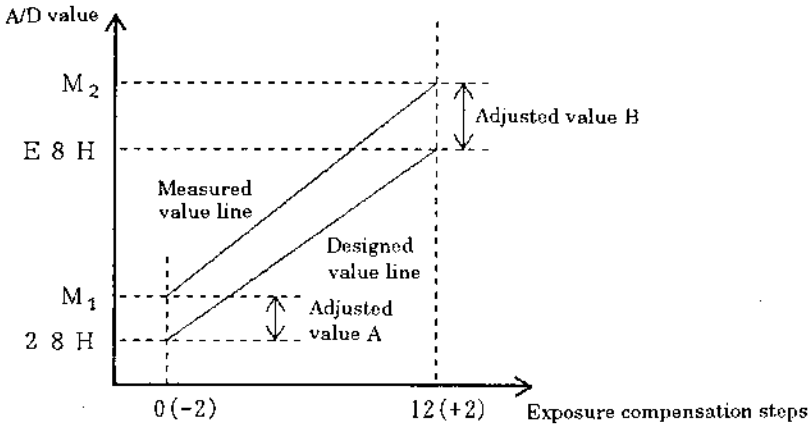
Let M_1 be the A/D converted value obtained when the Exposure Compensation Dial is set in the "– 2" position and M_2 be the A/D converted value obtained when the Exposure Compensation Dial is set in the "+ 2" position. Then each adjusted value is obtained as follows :

① The designed value for the A/D converted value obtained when the Exposure Compensation Dial is set in the "– 2" position is 28 (hexadecimal). The adjusted value A is calculated from the following formula :

Adjusted value A = M_1 – 28 (hex.) ---------- (1)

② The designed value for the A/D converted value obtained when the Exposure Compensation Dial is set in the "+ 2" position is E8 (hexadecimal). The adjusted value B is calculated from the following formula :

Adjusted value B = M_2 – E8 (hex.) ---------- (2)



The ranges of adjusted values A and B for exposure compensation resistance are as shown below. With values out of these ranges, the adjustment is impossible.

Adjusted value A for exposure compensation resistance : – 20 ~ 20
Adjusted value B for exposure compensation resistance : – 20 ~ 20

| Adjusted value A – Adjusted value B | < 20

D-3. Semiautomatic Adjustment of Aperture Resistance

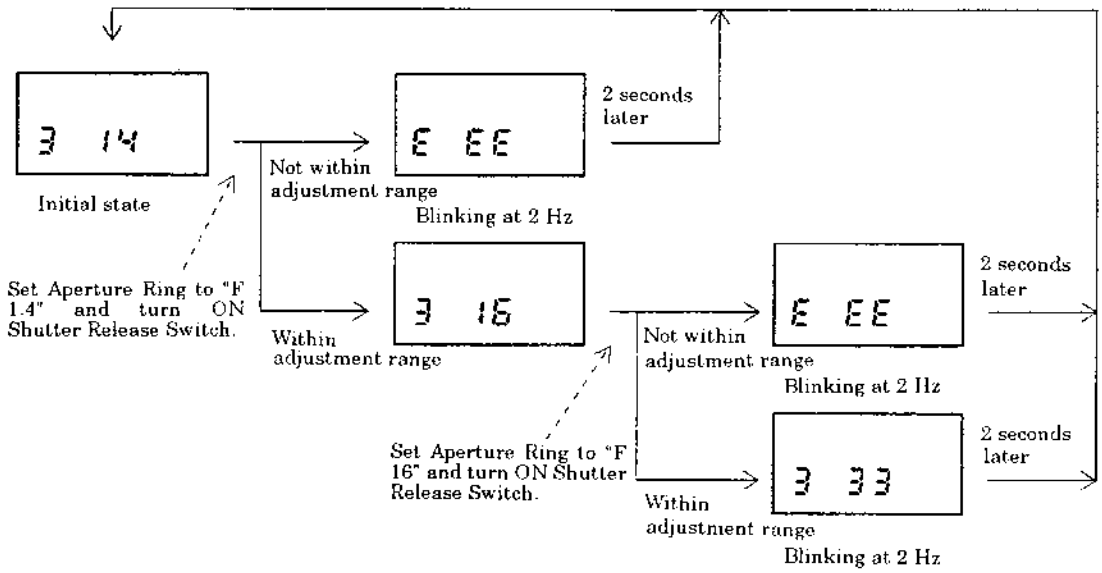
Make this adjustment to set the adjusted values A and B for the aperture resistance.

With the Planar F 1.4/50 (MM type) standard lens mounted, perform the following operations :

① In the manual adjusting mode, select the adjustment item D-3. In the initial state, the 7-segment display will indicate 3 14.

② Set the Aperture Ring in the "F 1.4" position and turn ON the Shutter Release Switch. The voltage from the aperture resistor will be A/D converted and the adjusted value A for the aperture resistance will be obtained.
When the adjusted value A for aperture resistance is within the adjustment range, the display will change to 3 16. If the adjusted value is not within the adjustment range, the display will indicate E EE, blinking at 2 Hz, for two seconds and then returns to the initial state.

③ With the display indicating 3 16, set the Aperture Ring in the "F 16" position and turn ON the Shutter Release Switch. The voltage from the aperture resistor will be A/D converted and the adjusted value B for the aperture resistance will be obtained.
When the adjusted value B for the aperture resistance is within the adjustment range, the adjusted values A and B for the aperture resistance will be written in EEPROM. The display will indicate 3 33, blinking at 2 Hz, for two seconds to show the execution of writing and then returns to the initial state. If the adjusted value is not within the adjustment range, the display will indicate E EE, blinking at 2 Hz, for two seconds and then returns to the initial state.



※ Reference ----- How to Obtain Adjusted Values for Aperture Resistance

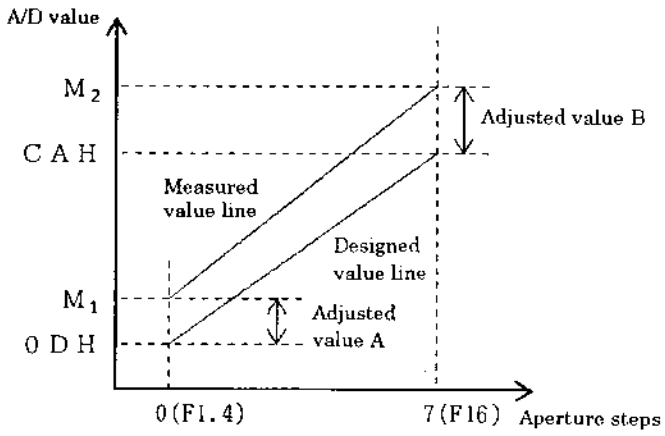
Let M_1 be the A/D converted value obtained when the Aperture Ring is set in the "F 1.4" position and M_2 be the A/D converted value obtained when the Aperture Ring is set in the "F 16" position. Then each adjusted value is obtained as follows :

① The designed value for the A/D converted value obtained when the Aperture Ring is set in the "F 1.4" position is 0D (hexadecimal). The adjusted value A is calculated from the following formula :

$$\text{Adjusted value A} = M_1 - 0D \text{ (hex.)} \quad \cdots\cdots\cdots \quad (1)$$

② The designed value for the A/D converted value obtained when the Aperture Ring is set in the "F 16" position is CA (hexadecimal). The adjusted value B is calculated from the following formula :

$$\text{Adjusted value B} = M_2 - CA \text{ (hex.)} \quad \cdots\cdots\cdots \quad (2)$$



The ranges of adjusted values A and B for aperture resistance are as shown below. With values out of these ranges, the adjustment is impossible.

Adjusted value A for aperture resistance : $-12 \sim 20$
Adjusted value B for aperture resistance : $-20 \sim 20$

$$| \text{Adjusted value A} - \text{Adjusted value B} | < 20$$

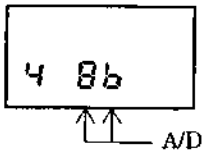
(Ⅲ) Indication Mode

Item : D-4~

Indication Mode is used to indicate the internally processed data on the Display Panel. The data is indicated by the 7-segment display.

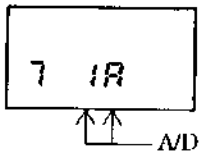
D-4~6. Indication of Resistor Voltage

The 7-segment display indicates the A/D converted value of the input voltage is indicated at the 2nd and 1st digit positions. The value is displayed by one of the hexadecimal numbers ranging from 00 (0) to FF (255).

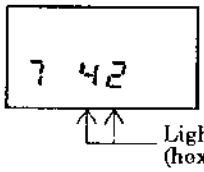


D-7, 8. Indication of Light Metering Value

The display indicates the values obtained from the light metering sensor. The value indicated is switched between two types by changing the F Dial position.
When the F Dial is set in the "AFL" position, the A/D converted value of the Light Metering IC output is displayed. The display style is the same as those for D-4~6.
With the F Dial is set in the "AF" position, the light metering value (CALBLV) obtained by calculation is indicated. The value is indicated at the 2nd and 1st digit positions of the 7-segment display by one of the hexadecimal numbers ranging from 20 to F8.



When F Dial is in "AFL" position

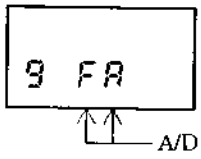


When F Dial is in "AF" position

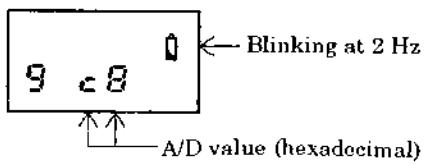
D-9, A. Indication of Battery Check Result

The display indicates the result of battery check. The result of no-load battery check is indicated at D-9 and the result of loaded battery check is indicated at D-A. At the turning ON of the Shutter Release Switch, battery check is performed and the A/D converted value is indicated at the 1st and 2nd digit positions of the 7-segment display. The display style is the same as mentioned at D-4~6.

At D-9, the mark "0" blinks at 2 Hz when the battery level is judged lower than B3 level .

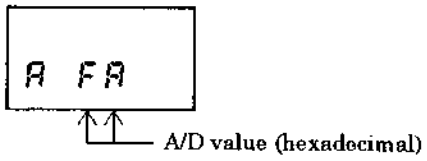


Display at higher than B3 level

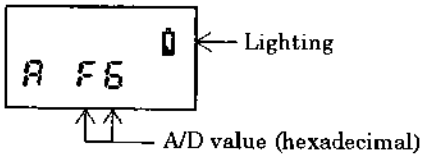


Display at lower than B3 level

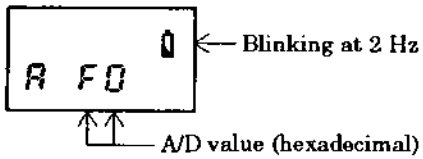
At D-A, the mark "▯" goes out when the battery level is judged OK, the mark "▯" lights up when the battery level is B0 to B1 and the mark "▯" blinks when the battery level is lower than B1. When the battery level is lower than B2, the A/D value also blinks.



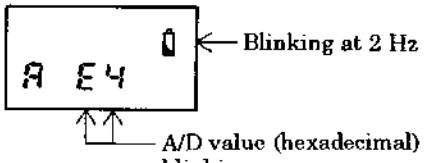
Display at OK level



Display at B0 to B1 level



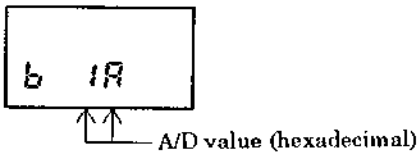
Display at B1 to B2 level



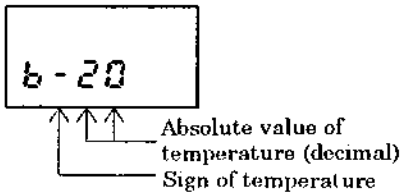
Display at lower than B2 level

D-b. Indication of Temperature

The display indicates the values obtained from the temperature sensor. The value indicated is switched between two types by changing the F Dial position. .
When the F Dial is set in the "AFL" position, the A/D converted value of the sensor voltage is displayed. The display style is the same as those for D-4~6.
With the F Dial is set in the "AF" position, the temperature obtained by calculation is indicated. (Unit : ℃) The value is indicated at the 3rd, 2nd and 1st digit positions of the 7-segment display by a decimal number with a sign. At the 3rd digit position, a blank space is left to indicate the plus sign and a symbol "–" is displayed to indicate the minus sign. At the 2nd and 1st positions, the absolute value is displayed. The range of displayed values is - 99~ 99.



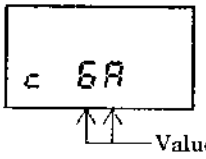
When F Dial is in
"AFL" position



When F Dial is in
"AF" position

D-c ~E. Shots Counter

The display indicates the total number of shots. Every time the shutter operates. the camera adds one to the value of the shots counter in EEPROM. In the shots counter mode. the value of the counter is indicated at the 2nd and 1st digit positions of the 7-segment display.



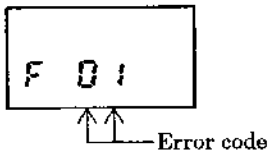
At D-E, the displayed value is incremented every shutter operation. The value is displayed by one of the hexadecimal numbers ranging from 00 to FF.
At D-d, the displayed value is incremented every carry at D-E. The value is displayed by one of the decimal numbers ranging from 00 to 03.
At D-c, the displayed value is incremented every carry at D-d. The value is displayed by one of the decimal numbers ranging from 00 to 99.

Since the value at D-c is incremented every 1024 shots, the display can be used as a counter that shows a multiple of about 1000 shots.

The values of the shots counters can be changed and written by the same procedure as in the adjusted value setting mode. If the Shutter Unit has been replaced with a new one by servicing, write 00 in the shots counters D-c ~ E. If the Main FPC Ass'y is replaced with a new one without replacing the Shutter Unit, read out the shots count from the old EEPROM and write it in the new EEPROM.

D-F. Error Code

The display indicates an error that has occurred. If an error occurs during camera operation, an error code corresponding to the error is written in EEPROM. In the error code mode, the error code written in EEPROM is displayed at the 2nd and 1st digit positions of the 7-segment display. There are nine indications of 00 to 08. The error codes available and the corresponding errors are as follows :

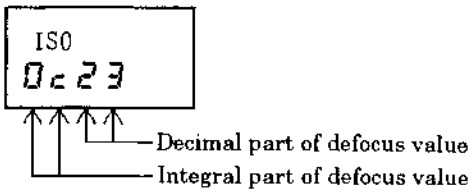


Error Code	Error	Display
00000	No error (Initial state)	00
00001	Mirror up control error	01
00010	Shutter control error	02
00011	Aperture control error	03
00100	One Revolution Limit Switch release error	04
00101	Infinity end detection error	05
00110	Close distance end detection error	06
00111	AF accumulation start error	07
01000	AF accumulation end error	08

At the turning ON of the Shutter Release Switch, error code "00" is written in EEPROM. The display "d 00" blinks at 2 Hz for two seconds to show that the error code has been rewritten to "00".

D-ISO. Indication of Defocus Value

The display indicates the defocus value obtained from the output of the AF sensor. At this item D-ISO, the defocus value is displayed using all the four digits of the 7-segment display. The unit is 1/256 pitch. The value is displayed in two's-complement form in the range of 8000 (–32768/256 = –128) to 7FFF (32767/256, about 128).

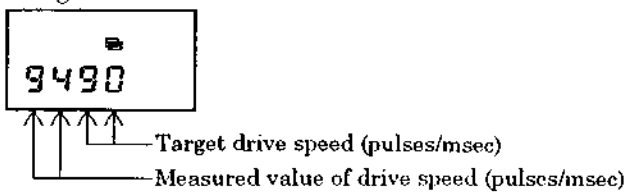


The example above shows that the defocus value is 12 + 35/256 = 12.137 (pitch)

D-EX. Indication of Drive Speed

Actual driving is executed based on a preset target drive speed, and the display indicates the target drive speed and the measured value of the actual drive speed. The target drive speed is displayed at the inferior-order two digit positions of the 7-segment display. The superior-order 2 bits of one byte data represent the integral part and the other bits represent the decimal part. For example, if the display shows 90 , the target drive speed is $144 \times 2^{-6} = 2.25$ (pulses/msec). The target drive speed can be changed by pressing the UP or DOWN Button with the Main Switch set in the "AEL" position.

At the turning ON of the Shutter Release Switch, driving is executed based on the target drive speed and the drive speed measured during the actual driving is displayed at the superior-order 2 digit positions of the 7-segment display. The display style is the same as in the case of the inferior-order 2 digits.



(Ⅳ) Monitor Adjustment Mode

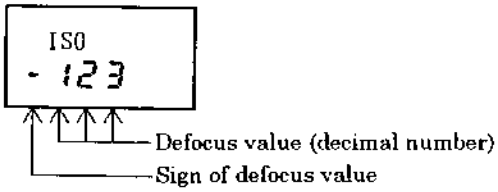
Item : A-ISO, B-5

Use this mode to change the adjusted value while checking the output result coupled with the change of the adjusted value.

A-ISO. AF Adjusted Value

Set the AF adjusted value. The AF adjusted value itself can be set at item A-F. Here, however, adjust the value while displaying, for easy adjustment, the defocus value calculated according to the adjusted value. The Display Panel indicates the defocus value obtained by calculation. The defocus value is displayed using all the four digits of the 7-segment display. The unit is 1/128 pitch. The sign is indicated at the 4th digit position and the value is displayed by one of the decimal numbers ranging from -999 (-999/128) to 999 (999/128).

Item A-ISO

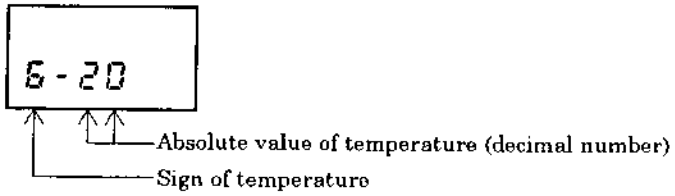


The example above shows that the defocus value is – 123/128 = – 0.96 (pitch)

Change the adjusted value by pressing the UP or DOWN Button with the Main Switch set in the "AEL" position. The changing procedure is the same as at item A-F. However, the AF compensation value itself is not displayed. Change the AF compensation value while checking the indicated defocus value corresponding to the compensation value. The procedure for writing the adjusted value in EEPROM is the same as in the adjusted value setting mode.

B-6. Adjusted Value for Temperature

Set the adjusted value for temperature . The adjusted value for temperature itself can be set at item B-d. Here, however, adjust the value while displaying, for easy adjustment, the temperature calculated according to the adjusted value.
The Display Panel indicates the temperature obtained by calculation. (°C) The value is indicated at the 3rd, 2nd and 1st digit positions of the 7-segment display by a decimal number with a sign. At the 3rd digit position, a blank space is left to indicate the plus sign and a symbol "–" is displayed to indicate the minus sign.
At the 2nd and 1st positions, the absolute value is displayed. The range of displayed values is -99~ 99.



Change the adjusted value by pressing the UP or DOWN Button with the Main Switch set in the "AEL" position. The changing procedure is the same as at item B-5. However, the adjusted value for temperature itself is not displayed. Change the adjusted value for temperature while checking the indicated temperature corresponding to the adjusted value. The procedure for writing the adjusted value in EEPROM is the same as in the adjusted value setting mode.

(V) USM Drive Adjusting Mode

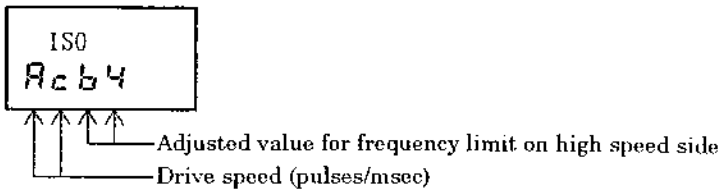
Item : C-ISO, EX

Use this mode to make adjustments concerning the USM drive.

The 7-segment display indicates the adjusted value at its inferior-order 2 digit positions. At the turning ON of the Shutter Release Switch, the USM is driven based on this value and the drive speed measured during this driving is displayed at the superior-order 2 digit positions of the 7-segment display. The superior-order 2 bits of one byte data represent the integral part and the other bits represent the decimal part. For example, if the display shows 90 , the drive speed is $144 \times 2^{-6} = 2.25$ (pulses/msec).
Change the adjusted value so that the actual drive speed is brought close to the target drive speed. The procedure for changing the adjusted value is the same as in the adjusted value setting mode.

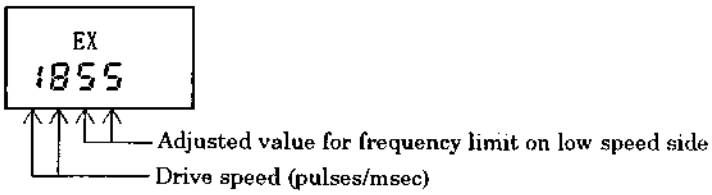
C-ISO. Adjusted Value for Frequency Limit on High Speed Side

Target drive speed ---------- 90 (hex.) ± 7 (hex.) = 2.25 ± 0.11 (pulses/msec)
Adjusted value for frequency limit on high speed side ---- 9D (hex.) ~ 63 (hex.) (- 99 ~ 99)



C-EX. Adjusted Value for Frequency Limit on Low Speed Side

Target drive speed ..... 16 (hex.) ± 2 (hex.) = 0.34 ± 0.03 (pulses/msec)
Adjusted value for frequency limit on low speed side --- 9D (hex.) ~ 63 (hex.) (- 99 ~ 99)



(VI) Special Mode

Item : C-c, d, E, F

C-c. Indication of ROM Version

The display indicates the ROM version at the inferior-order 2 digit positions by a hexadecimal number.

C-d. All Indications Lighting on Display Panel

All the indicates on the Display Panel light up. The lighting of all the indications signifies the selection of item C-d.

C-E. All Indications Lighting in Viewfinder

All indications in the viewfinder light up. The 7-segment display on the Display Panel indicates E 00. In this state, the Back Light LCD for the viewfinder display is always lighting.

C-F. All Data Erasure in EEPROM

All the data in EEPROM are erased and the value is cleared to 00 (hexadecimal). The 7-segment display on the Display Panel indicates F 00.
At the turning ON of the Shutter Release Switch, the data in EEPROM are all erased. The display "F 00" blinks at 2 Hz for two seconds to show that all the data in EEPROM have been erased.
CAUTION :

- **All the data on all the adjustment items will be cleared. Take due care when performing the operation for all data erasure.**

Items Not to Be Used

Item : A-EX, B-E~ , C-7~b

The 7-segment display indicates 0 at its 2nd and 1st digit positions. Press of the UP or DOWN Button is not accepted even with the Main Switch set in the "AEL" position.

[Procedure for Manual Adjustments]

This section describes concrete procedure for each adjustment. The overall flow of adjustments is as follows :

1. Adjustments of Dials
   - 1-1 Adjustment of Shutter Dial (Adjustment item D-1, etc.)
   - 1-2 Adjustment of Exposure Compensation Dial (Adjustment item D-2, etc.)
   - 1-3 Adjustment of Aperture Read Mechanism (Adjustment item D-3, etc.)
2. Adjustments of Exposure System
   - 2-1 Adjustment of Shutter Time (Adjustment item A-1, etc.)
   - 2-2 Adjustment of Average Light Metering (Adjustment item A-2, 3)
   - 2-3 Adjustment of Spot Light Metering (Adjustment item A-4, 5)
   - 2-4 Adjustment of Aperture Control (Adjustment item A-6, 7 , 8)
   - 2-5 Adjustment of TTL Flash Auto Control Value (Adjustment item A-9)
3. Adjustments of Body Drive System
   - 3-1 Adjustment of Temperature (Adjustment item B-5)
   - 3-2 Adjustment of USM System (Adjustment item C-ISO, EX)
4. Adjustment of AF System
   - 4-1 Adjustment of AF (Adjustment item B-F)

Notes :
* Conduct 2 after 1.
* Do not change the order of adjustments 2-1 ~ 2-5.
* Conduct 3-2 after 3-1.
* Conduct 4 after 3.

1. Adjustments of Dials

1-1. Adjustment of Shutter Dial

① Make the semiautomatic adjustment at item D-1. See (II) Semiautomatic Adjustment Mode of "Operations in Manual Adjustments".

② Return to the normal mode and check the indication on the Viewfinder LCD to make certain that the setting of the Shutter Dial is read correctly. When the reading is correct, the adjustment is completed.

③ If an error has occurred in the semiautomatic adjustment or reading is not performed correctly, check the value displayed at item D-4. The value is displayed in hexadecimal. The value will be changed by turning the Shutter Dial. The ideal values corresponding to the positions of the Shutter Dial are as follows :

Dial Position	Ideal Value [Decimal number in ( )]
4 S	F 0 H (2 4 0)
2 S	E 0 H (2 2 4)
1	D 0 H (2 0 8)
2	C 0 H (1 9 2)
4	B 0 H (1 7 6)
8	A 0 H (1 6 0)
1 5	9 0 H (1 4 4)
3 0	8 0 H (1 2 8)
6 0	7 0 H (1 1 2)
1 2 5	6 0 H (9 6)
2 5 0	5 0 H (8 0)
5 0 0	4 0 H (6 4)
1 0 0 0	3 0 H (4 8)
2 0 0 0	2 0 H (3 2)
4 0 0 0	1 0 H (1 6)

If the displayed values are not within the range of ±5 from the respective ideal values, there may be a fault in the read mechanism (defective or dirty Code PC Board, defective or floating contact on the Exp. Compensation Contact Base Ass'y for Shutter Dial).

When all the displayed values are within the range of ±5 from the respective ideal values, set the adjusted values A and B to "0" at item C-1 and item C-2. Then reading will be performed correctly.

④ Set the item minor code to "0" and press the Shutter Release Button to write the adjusted values.

1-2. Adjustment of Exposure Compensation Dial

① Make the semiautomatic adjustment at item D-2. See (II) Semiautomatic Adjustment Mode of "Operations in Manual Adjustments".

② Return to the normal mode and check the indication on the Viewfinder LCD to make certain that the setting of the Exposure Compensation Dial is read correctly. When the reading is correct, the adjustment is completed.

③ If an error has occurred in the semiautomatic adjustment or reading not performed correctly, check the value displayed at item D-5. The value is displayed in hexadecimal. The value will be changed by turning the Exposure Compensation Dial. The ideal values corresponding to the positions of the Exposure Compensation Dial are as follows :

Dial Position	Ideal Value [Decimal number in ( )]
+ 2	E 8 H (2 3 2)
+ 5 / 3	D 8 H (2 1 6)
+ 4 / 3	C 8 H (2 0 0)
+ 1	B 8 H (1 8 4)
+ 2 / 3	A 8 H (1 6 8)
+ 1 / 3	9 8 H (1 5 2)
0	8 8 H (1 3 6)
− 1 / 3	7 8 H (1 2 0)
− 2 / 3	6 8 H (1 0 4)
− 1	5 8 H (8 8)
− 4 / 3	4 8 H (7 2)
− 5 / 3	3 8 H (5 6)
− 2	2 8 H (4 0)

If the displayed values are not within the range of ±7 from the respective ideal values, there may be a fault in the read mechanism (defective or dirty Code PC Board, defective or floating contact on the Exp. Compensation Contact Base Ass'y).

When all the displayed values are within the range of ±7 from the respective ideal values, set the adjusted values A and B to "0" at item C-3 and item C-4. Then reading will be performed correctly.

④ Set the item minor code to "0" and press the Shutter Release Button to write the adjusted values.

1-3. Adjustment of Aperture Read Mechanism

① Make the semiautomatic adjustment at item D-3. See (II) Semiautomatic Adjustment Mode of "Operations in Manual Adjustments".

② Return to the normal mode and check the indication on the Viewfinder LCD to make certain that the aperture value of the Standard Lens is read correctly. When the reading is correct, the adjustment is completed. At this stage, if the indication does not agree with the aperture value, especially when the Aperture Ring is set in the open position, first check to see if there is any fault in the Open F Value Read Mechanism. When there is no fault in the Open F Value Read Mechanism, proceed to ③.

③ If an error has occurred in the semiautomatic adjustment or reading is not performed correctly, check the value displayed at item D-5. The value is displayed in hexadecimal. The value will be changed by turning the Aperture Ring. The ideal values corresponding to the positions of the Aperture Ring are as follows :

Aperture Ring Position	Ideal Value [Decimal number in ( )]
16	CAH (202)
11	AFH (175)
8	94H (148)
5.6	79H (121)
4	5EH (94)
2.8	43H (67)
2	28H (40)
1.4	0DH (13)

Note : When Planar F 1.4/50 (MM type) is mounted

Make certain that the displayed value increases by a constant value (27 is ideal) at each stop-down step of the Aperture Ring. There may be a case where the increase or decrease in the displayed value is reversed, the value does not change at some steps or the change width varies significantly. In such a case, there may be a fault in the read mechanism (defective or dirty Aperture Code Ass'y or faulty reassembly of Aperture Code Ass'y).

When there is no abnormality found in the displayed values, make the adjustment as follows :

a) Check the adjusted values A and B for aperture resistance at manual adjustment items C-5 and C-6.
b) At manual adjustment item D-6, check the A/D value obtained when the Aperture Ring is set to F5.6.
c) Calculate the compensation value from the following formula:

Compensation value =
[A/D value of F5.6 – (Adjusted value A × 3/7 + Adjusted value B × 4/7 + 121)] ÷ 2

* Since the compensation value is an integer, to round down the figures below the decimal point.

d) At manual adjustment items C-5 and C-6, add the compensation value to the adjusted values A and B for aperture resistance.
e) Set the item minor code to "0" and press the Shutter Release Button to write the adjusted values.

2. Adjustments of Exposure System

* Before making these adjustments, make sure that the Adjustments of Dials of 1. have been completed. Also be sure to make the adjustments 2-1 to 2-4 in the named order. Making the adjustments in wrong order will not achieve incorrect adjustments.

2-1. Adjustment of Shutter Time

① At item A-1, set the camera on the shutter tester with the Back Cover open. Set the Exposure Mode Selector Lever to "M". With the Back Cover open, the shutter speed is set to "1/6000" when the Shutter Dial is set in the "4000" position.
② Turn ON the Shutter Release Switch so that the camera will execute shutter release sequence. Check the shutter time indicated on the shutter tester. If the shutter time is longer than 172 μsec, decrement the adjusted value. If the shutter time is shorter than 172 μsec, increment the adjusted value. The adjustment range is -26~27. If the adjustment can not be achieved in this range, the shutter mechanism is considered to be defective.
③ Set the item minor code to "0" and press the Shutter Release Button to write the adjusted values.

(Allowable Range of Manual Shutter Speed)

Shutter Speed	+	Reference Value	−	Tolerance
X	5.92	5.52	5.15	±0.10EV
4″	4141	4000	3863	
2″	2070	2000	1931	
1″	1035	1000	966	
1/2	517.6	500	483.0	±0.05EV
1/4	258.8	250	241.5	
1/8	134.0	125	116.6	
1/15	66.99	62.50	58.32	
1/30	33.55	31.30	29.20	±0.10EV
1/60	16.75	15.63	14.58	
1/125	8.37	7.81	7.29	
1/250	4.81	3.91	3.17	
1/500	2.40	1.95	1.58	±0.30EV
1/1000	1.21	0.98	0.80	
1/2000	0.647	0.49	0.371	±0.40EV
1/4000	0.370	0.244	0.161	±0.60EV

(Unit : ms)

2-2. Adjustment of Average Light Metering

* Mount the Standard Lens of Planar F 1.4/50 (MM type) on the camera, set the ISO to "100" and set the camera on the light exposure tester. Under these conditions, make the adjustments 2-2 to 2-8.

  First set the Exposure Mode Selector Lever to "Av", the aperture to F 5.6 and the light exposure tester to LV 9.

① At item A-2, set the Exposure Mode Selector Lever to "Av", the aperture to F 5.6, the Metering Change Lever to average light metering and the light exposure tester to LV 9.
② Turn ON the Shutter Release Switch so that the camera will execute shutter release sequence. Check the light exposure variance △EV displayed on the light exposure tester. If the variance is plus, decrement the adjusted value. If the variance is minus, increment the adjusted value.
③ Change the item to A-3 and set the light exposure tester to LV 15.
④ Turn ON the Shutter Release Switch so that the camera will execute shutter release sequence. Check the light exposure variance △EV displayed on the light exposure tester. If the variance is plus, decrement the adjusted value. If the variance is minus, increment the adjusted value.
⑤ Set the item minor code to "0" and press the Shutter Release Button to write the adjusted values.

2-3. Adjustment of Spot Light Metering

① At item A-4, set the Exposure Mode Selector Lever to "Av", the aperture to F 5.6, the Metering Change Lever to spot light metering and the light exposure tester to LV 9.
② Turn ON the Shutter Release Switch so that the camera will execute shutter release sequence. Check the light exposure variance △EV displayed on the light exposure tester. If the variance is plus, decrement the adjusted value. If the variance is minus, increment the adjusted value.
③ Change the item to A-5 and set the light exposure tester to LV 15.
④ Turn ON the Shutter Release Switch so that the camera will execute shutter release sequence. Check the light exposure variance △EV displayed on the light exposure tester. If the variance is plus, decrement the adjusted value. If the variance is minus, increment the adjusted value.
⑤ Set the item minor code to "0" and press the Shutter Release Button to write the adjusted values.

(Allowable Range of Light Exposure Values)

Brightness	Allowable Range
9 (8)	– 0.5 ~ + 0.5 EV
12	– 0.5 ~ + 0.5 EV
15	– 0.5 ~ + 0.5 EV

ISO : 100
K value : 1.04

2-4. Adjustment of Aperture Control (Adjustments of Aperture Delay Pulse 1, 2 and 3)

(Adjustment of Aperture Delay Pulse 1)

① At item A-5, set the Exposure Mode Selector Lever to "Tv", the Shutter Dial to "125", the aperture to the minimum aperture (F 16), the Metering Change Lever to average light metering and the light exposure tester to LV 9.

② Turn ON the Shutter Release Switch so that the camera will execute shutter release sequence. Check the light exposure variance △EV displayed on the light exposure tester. If the variance is plus, increment the adjusted value. If the variance is minus, decrement the adjusted value. The adjustment range is -20 ~ 20.

(Adjustment of Aperture Delay Pulse 2)

③ Change the item to A-7 and set the light exposure tester to LV 12.

④ Turn ON the Shutter Release Switch so that the camera will execute shutter release sequence. Check the light exposure variance △EV displayed on the light exposure tester. If the variance is plus, increment the adjusted value. If the variance is minus, decrement the adjusted value. The adjustment range is -20 ~ 20.

(Adjustment of Aperture Delay Pulse 3)

⑤ Change the item to A-8 and set the light exposure tester to LV 15.

⑥ Turn ON the Shutter Release Switch so that the camera will execute shutter release sequence. Check the light exposure variance △EV displayed on the light exposure tester. If the variance is plus, increment the adjusted value. If the variance is minus, decrement the adjusted value. The adjustment range is -20 ~ 00. When the adjusted value is 00 and △EV is plus, leave the adjusted value being 00.

⑦ Set the item minor code to "0" and press the Shutter Release Button to write the adjusted values.

2-5. Adjustment of TTL Flash Auto Control Value

* Make the adjustment of TTL direct flash metering for use of a TLA Flash Unit.
* Set the Lens and Flash Unit on the camera, measure the TTL Flash Auto control value with the flash meter and change the adjusted value to optimize the TTL Flash Auto control value.
* Measure the TTL Flash Auto control value in an ambient without external light.

<Tools for Adjustment>

- Planar F 1.4/50 mm Lens
- Gray chart of 18% reflectivity
- Tripod
- Flash meter
- TLA Flash Unit
- Measure (measuring up to 3 m possible)

<Adjustment Procedure>

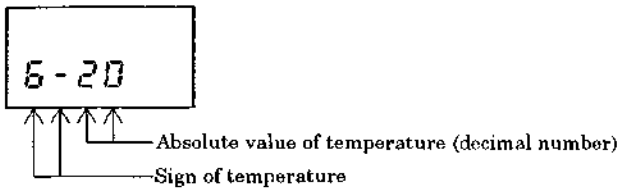
① Load the Ektachrome 64 film in the camera.
② Set the Lens and Flash Unit on the camera.
③ Mount the camera on the tripod.
④ Set the flash meter for the gray chart.
⑤ Place the tripod at 2 m from the gray chart.
⑥ Set the aperture for the lens to F 4.0.
⑦ Set the Exposure Mode Selector Lever of the camera to "Av" and the F Dial to "MF".
⑧ Set the Flash Unit to TTL Auto Mode and turn ON the power.
⑨ Adjust the focus in the viewfinder.
⑩ Fire the flash several times by operating the shutter and calculate the average of △EV.
⑪ Select item A-9.
⑫ Set the Main Switch Lever to "AEL" and change the adjusted value by pressing the UP or DOWN Button to optimize the TTL Flash Auto control value.
⑬ Set the item minor code to "0" and press the Shutter Release Button to write the adjusted values.

3. Adjustments of Body Drive System

Be sure to make the adjustment 3-2 after completion of the adjustment 3-1. Making the adjustments in wrong order will not achieve correct adjustments.

3-1. Adjustment of Temperature

① At item B-6, the temperature (℃) detected by the camera is indicated on the Display Panel by a decimal number with a sign.



Set the Main Switch in the "AEL" position and adjust the displayed value to the room temperature by means of the UP or DOWN Button. (Measure the room temperature using a thermometer.)

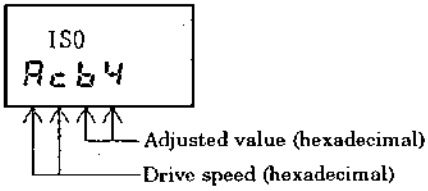
Note :

- When the camera has been brought from another place, the temperature inside the camera may be different from the room temperature for a while. Before starting this adjustment, allow the camera to stand at the room temperature for a while.

② Set the item minor code to "0" and press the Shutter Release Button to write the adjusted values.

3-2. Adjustment of USM System

① At item C-ISO, the adjusted value is displayed at the inferior-order 2 digit positions. At the turning ON of the Shutter Release Switch, the USM is driven based on the displayed value and the drive speed measured during this driving is displayed at the superior-order 2 digit positions.

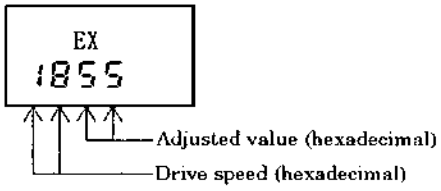


Set the Main Switch in the "AEL" position and change the adjusted value by means of the UP or DOWN Button so that the actual drive speed is brought close to the target value.

Target drive speed ---------- A0 (hex.) ± 7 (hex.)
Range of adjusted values --------- 80~FF (128 ~ 255)

② Change the item to C-EX and make the same adjustment as ①.

Target drive speed ---------- 18 (hex.)
Range of adjusted values --------- 00~ 7F (0 ~ 127)



③ Set the item minor code to "0" and press the Shutter Release Button to write the adjusted values.

4. Adjustment of AF (Auto Focusing)

Before starting this adjustment, make sure that the Adjustments of Body Drive System of 3. have been completed.

4-1. Adjustment of AF

* Mount the Lens on the camera and operate the camera to perform AF operation. When the focus indicator "●" is lighting in the viewfinder, check the state of the split image. When the split image is also in focus, this adjustment is completed.

<Tools for Adjustment>
- Planar F 1.4/50 mm Lens
- AF chart
- Tripod
- Measure (measuring up to 3 m possible)

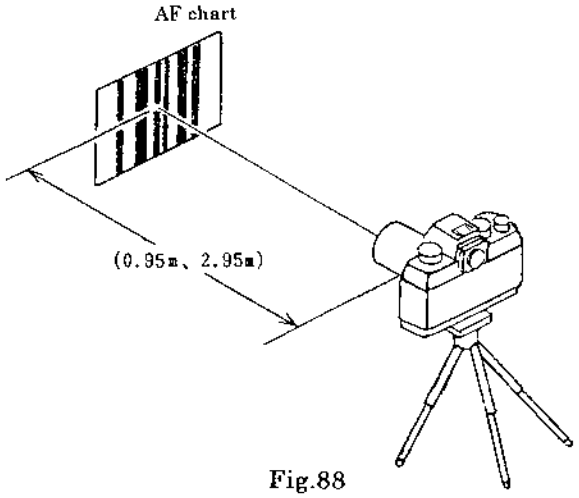


Fig.88

<Adjustment Procedure>
① Fix the AF chart on the wall.
② Set the Lens on the camera.
Set the Distance Ring of the Lens to "∞".
③ Mount the camera on the tripod.
④ Set the F Dial of the camera to "AF", the Focus Mode Selector Lever to "MF" or "SAF".
⑤ Place the tripod so that the distance from the AF chart to the Mount Ring of the camera is 0.95 m. In doing so, position the camera so that its optical axis is perpendicular to the AF chart.
⑥ Press the Focus Button and when the focus indicator "●" is lighting in the viewfinder, check the state of the split image.
⑦ Place the tripod so that the distance from the AF chart to the Mount Ring of the camera is 2.95 m. In doing so, position the camera so that its optical axis is perpendicular to the AF chart.
⑧ Press the Focus Button and when the focus indicator "●" is lighting in the viewfinder, check the state of the split image.
⑨ Select item A-F.
⑩ Set the Main Switch to "AEL".
⑪ By pressing the UP or DOWN Button, change the adjusted value to correct the misalignment of the halves of the split image as follows :
- Decrement the adjusted value if at 0.95 m and 2.95 m the upper half of the split image has been shifted to the right of the lower half.
- Increment the adjusted value if at 0.95 m and 2.95 m the upper half of the split image has been shifted to the left of the lower half.

⑫ Set the item minor code to "0" and press the Shutter Release Button to write the adjusted value.
⑬ When the adjusted value has been changed, operate the camera to perform AF operation and check the state of the split image again.
That is, repeat ⑤ to ⑧.
⑭ If the halves of the split image are not in alignment, make the adjustment again.
That is, repeat ⑨ to ⑫.
⑮ When the adjusted value has been changed, operate the camera to perform AF operation and check the state of the split image again.

C-3. OTHERS

C-3-1. Curtain Travel Speed

* The curtain travel speed can not be adjusted. Therefore, replace the Shutter Unit with a new one if the travel speed of each curtain is significantly different from the specified value.
* The travel speeds of the first curtain and second curtain are both such that each curtain takes about 3.15 ms to travel the vertical length of 21 mm.

C-3-2. Synchro Contact

<Delay time>

* Sensing point of Shutter Tester : 21 mm width
* Measure at shutter time "X".

A range : 0.25 ms or above
C range : 1.35 ms or above

<Contact efficiency>

The contact efficiency must be 50% or above at shutter speed of 1/180 sec. (X) or less.
(Use a contact efficiency tester at 1 ms.)

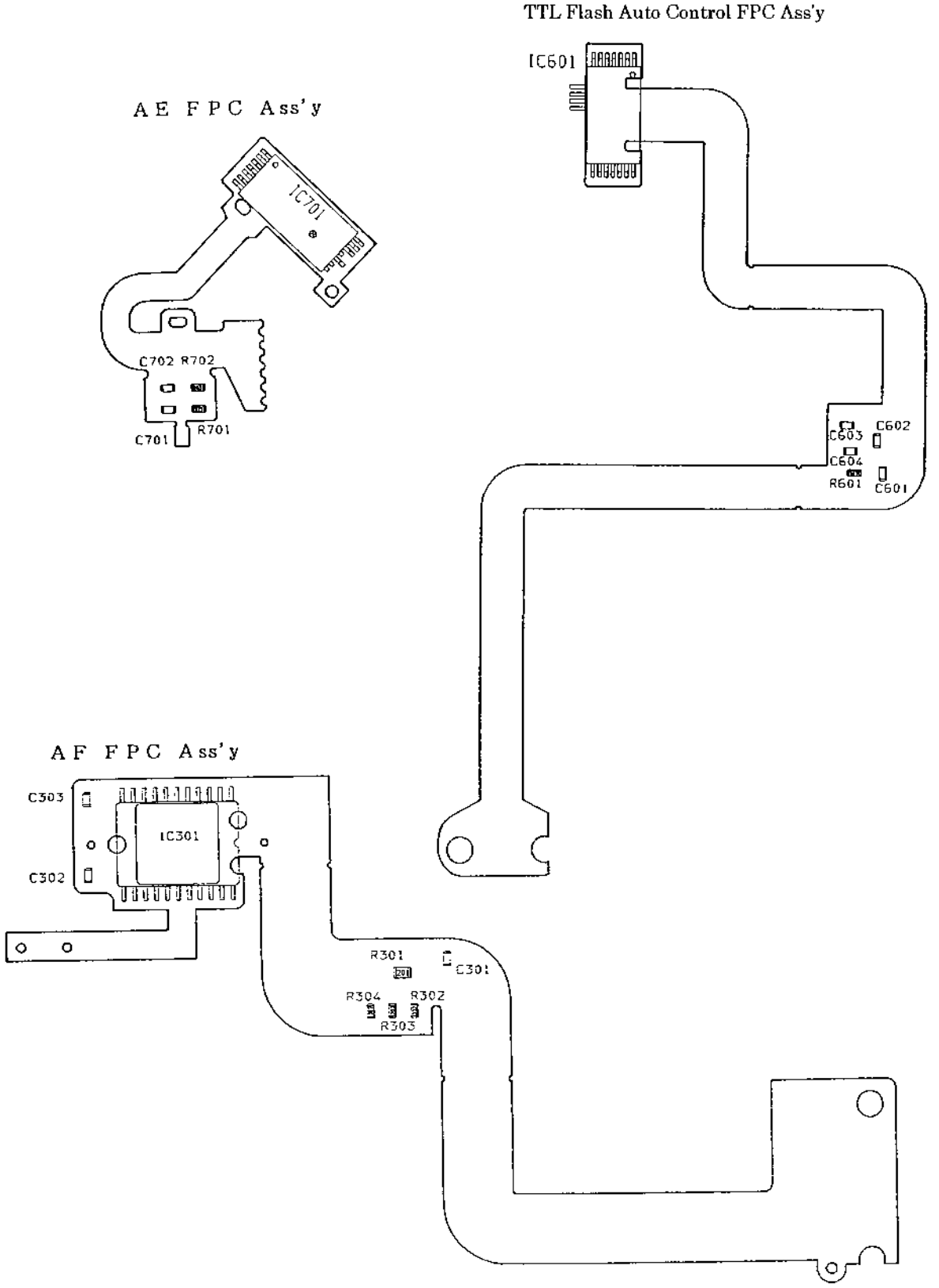
C-3-3. Current Consumption

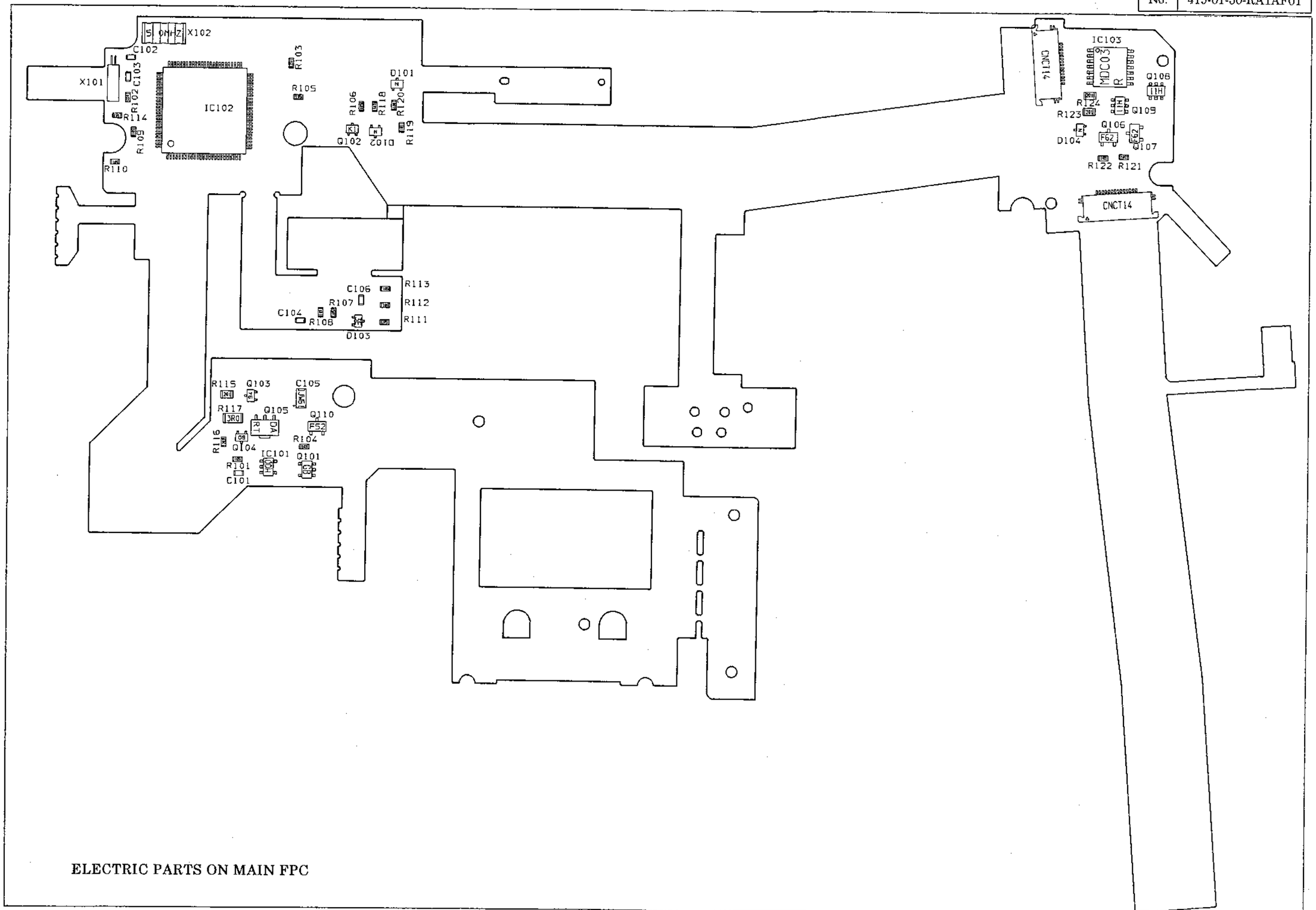
- Main Switch OFF (standby current) 30 μA or below
- Main Switch ON
  - LCD ON (Power ON) 200 mA or below
  - LCD OFF 50 μA or below

Winding operation (with film)	1000 mA or below
Winding stop current	1500 mA or below
Rewinding operation	600 mA or below
Release drive (without film)	500 mA or below
AF operation	800 mA or below

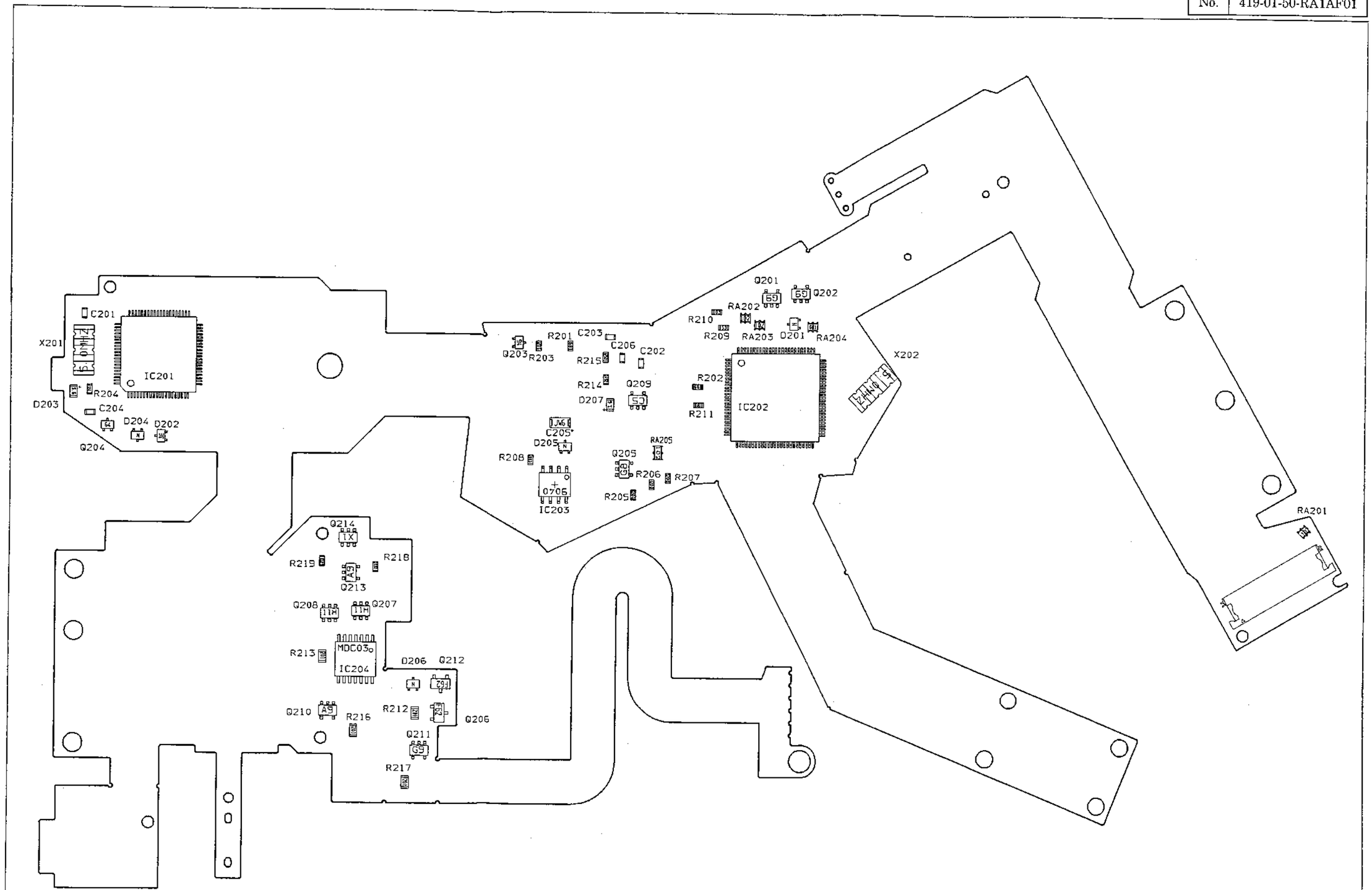
No.	419-01-50-RA1AF01

ELECTRIC ELEMENTS LOCATING DIAGRAM

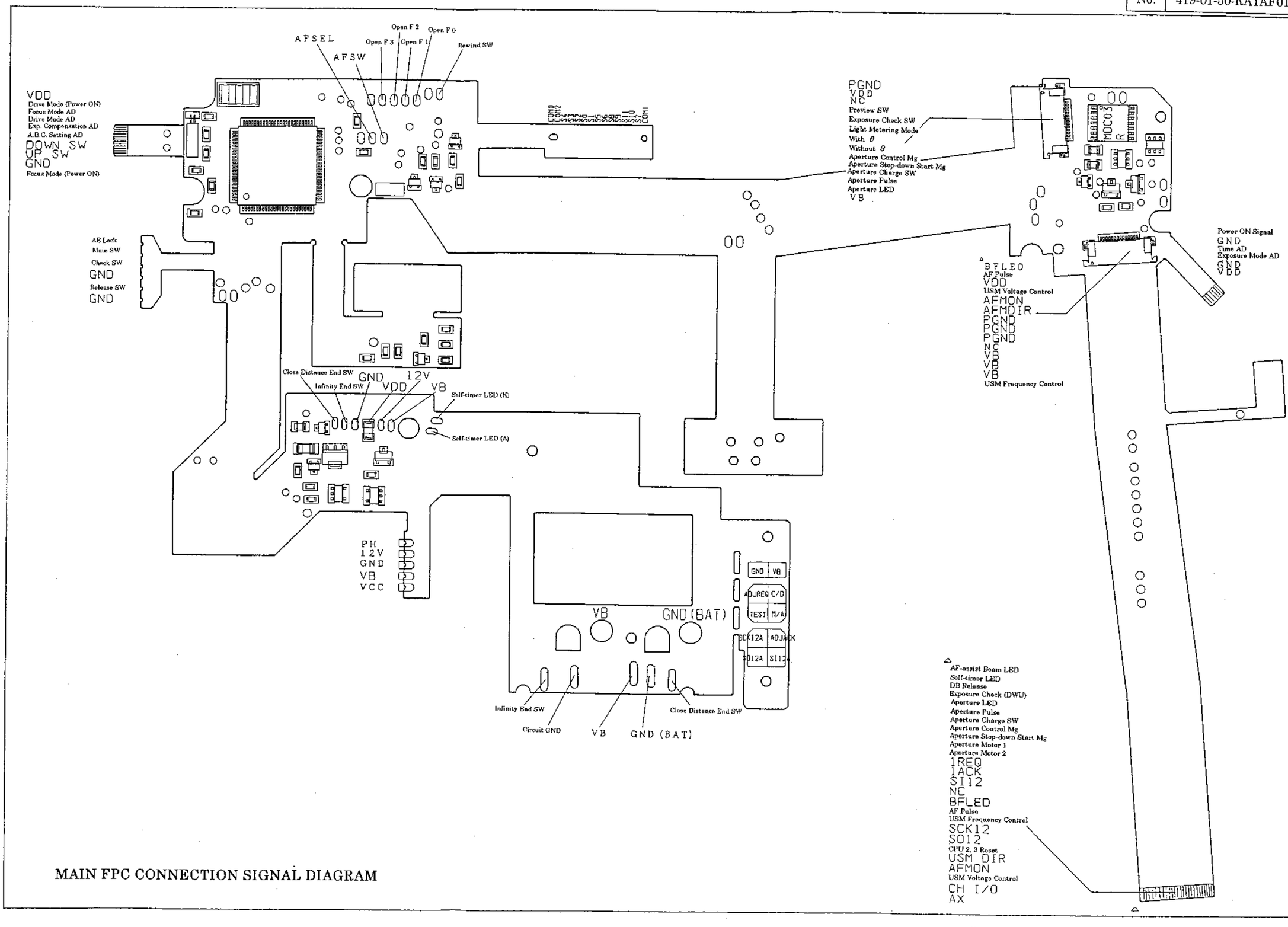




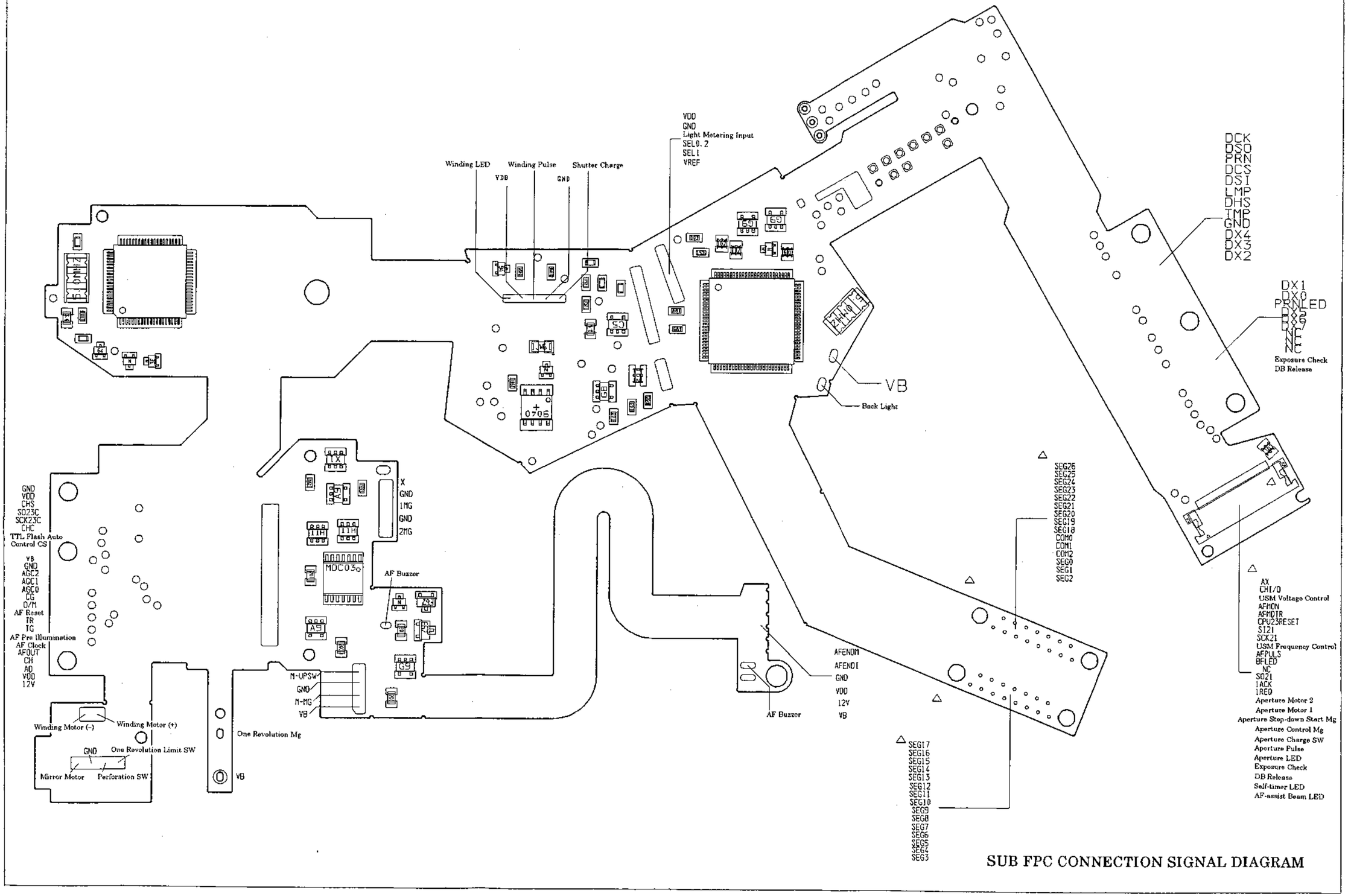
ELECTRIC PARTS ON MAIN FPC



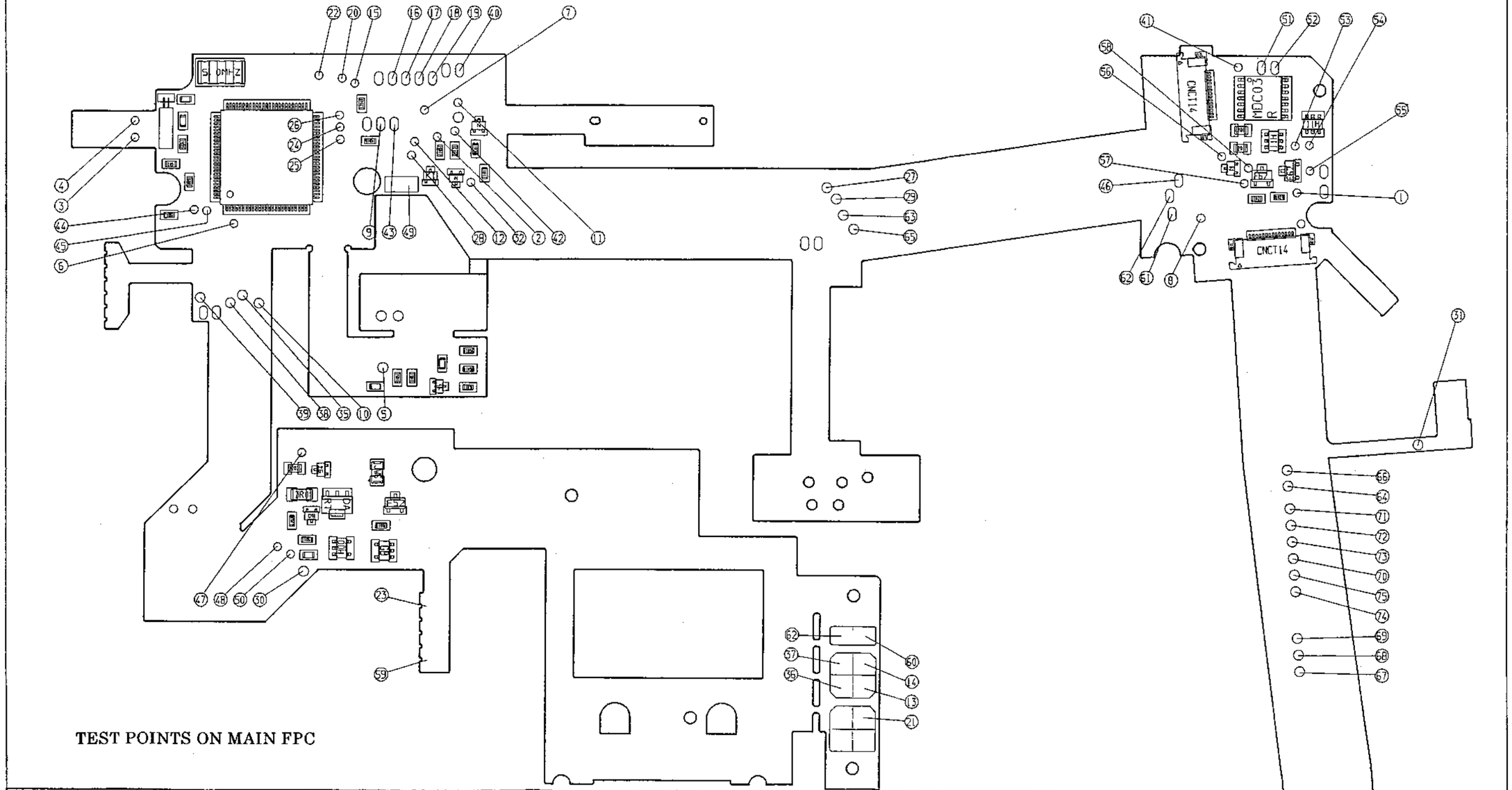
ELECTRIC PARTS ON SUB FPC



MAIN FPC CONNECTION SIGNAL DIAGRAM



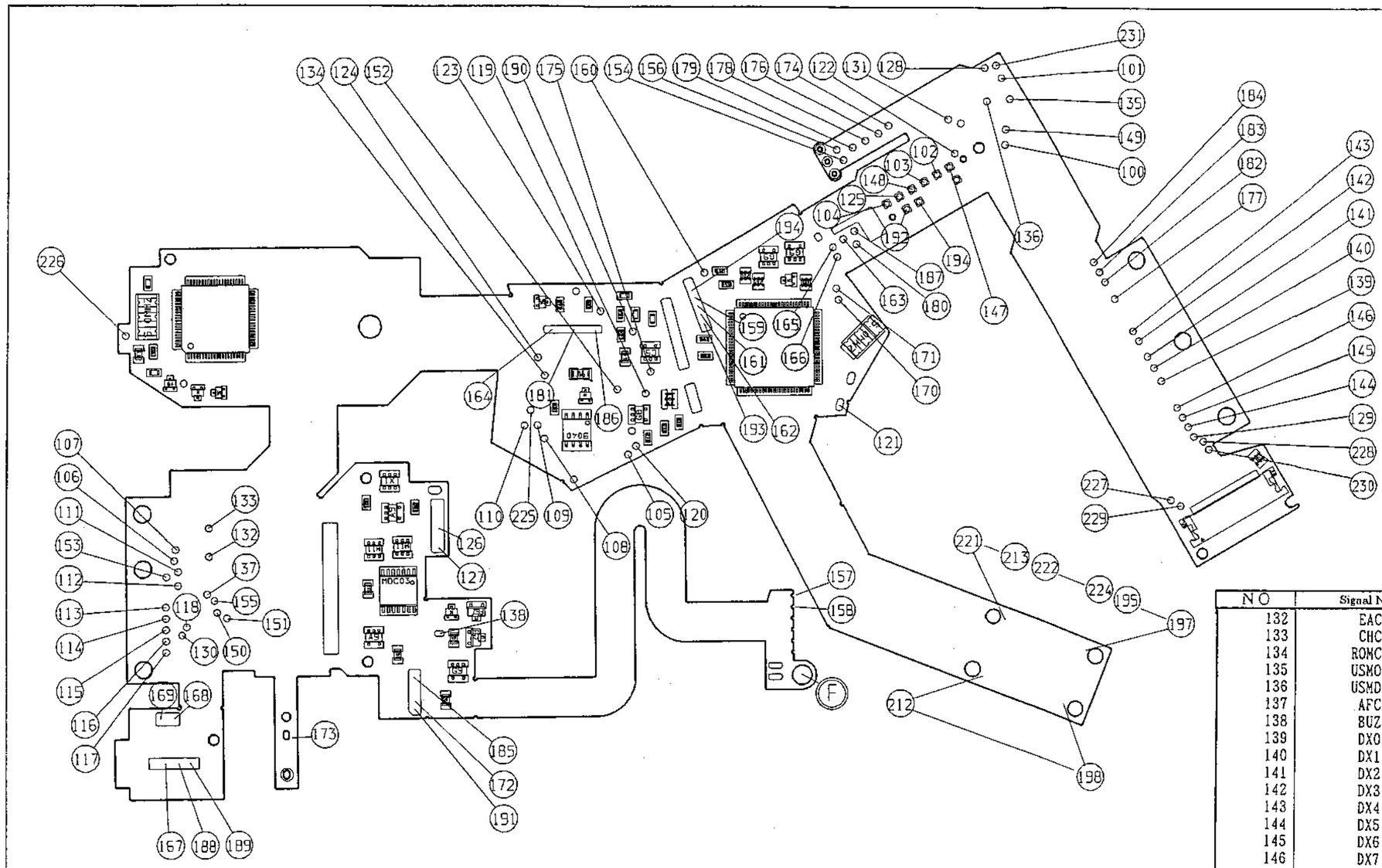
SUB FPC CONNECTION SIGNAL DIAGRAM



TEST POINTS ON MAIN FPC

NO	Signal Name	NO	Signal Name	NO	Signal Name	NO	Signal Name	NO	Signal Name
1	TIMEAD	16	OPEN3	31	BCOV	46	APAD	61	VDD
2	EMODAD	17	OPEN2	32	SPTG	47	Anode of D801	62	GND
3	ABCAD	18	OPEN1	33	SPTG	48	SELF	63	CH1/O (Shoe)
4	ECAD	19	OPEN0	34	SPTG	49	Cathode of D802	64	CH1/O
5	DRVAD	20	1REQ	35	MAIN	50	ASIST	65	AX (Shoe)
6	FMODAD	21	ADJACK	36	ADJTST	51	REWIND(M3)	66	AX
7	AESEL	22	CPURES	37	ADJREQ	52	REWIND(M4)	67	APC
8	DRS	23	POWO	38	S1	53	REWIND	68	ASG
9	APSEL	24	SO12A	39	S2	54	ACHGM	69	ACHGSW
10	AEL	25	SI12A	40	REWIND	55	ASTPMg	70	USMFDA
11	LENS1	26	SCK12A	41	PVIEW	56	Negative Side of L802	71	USMPDA
12	LENSO	27	STSDA	42	DWU, ECHK	57	ARLSMg	72	USMON
13	ADJMA	28	STSDA	43	APSW	58	Negative Side of L801	73	USMDIR
14	ADJCD	29	STSCK	44	DOWN	59	VCC	74	BFPC
15	1ACK	30	RESET	45	UP	60	VB	75	BFSG

No.	419-01-50-RA1AF01



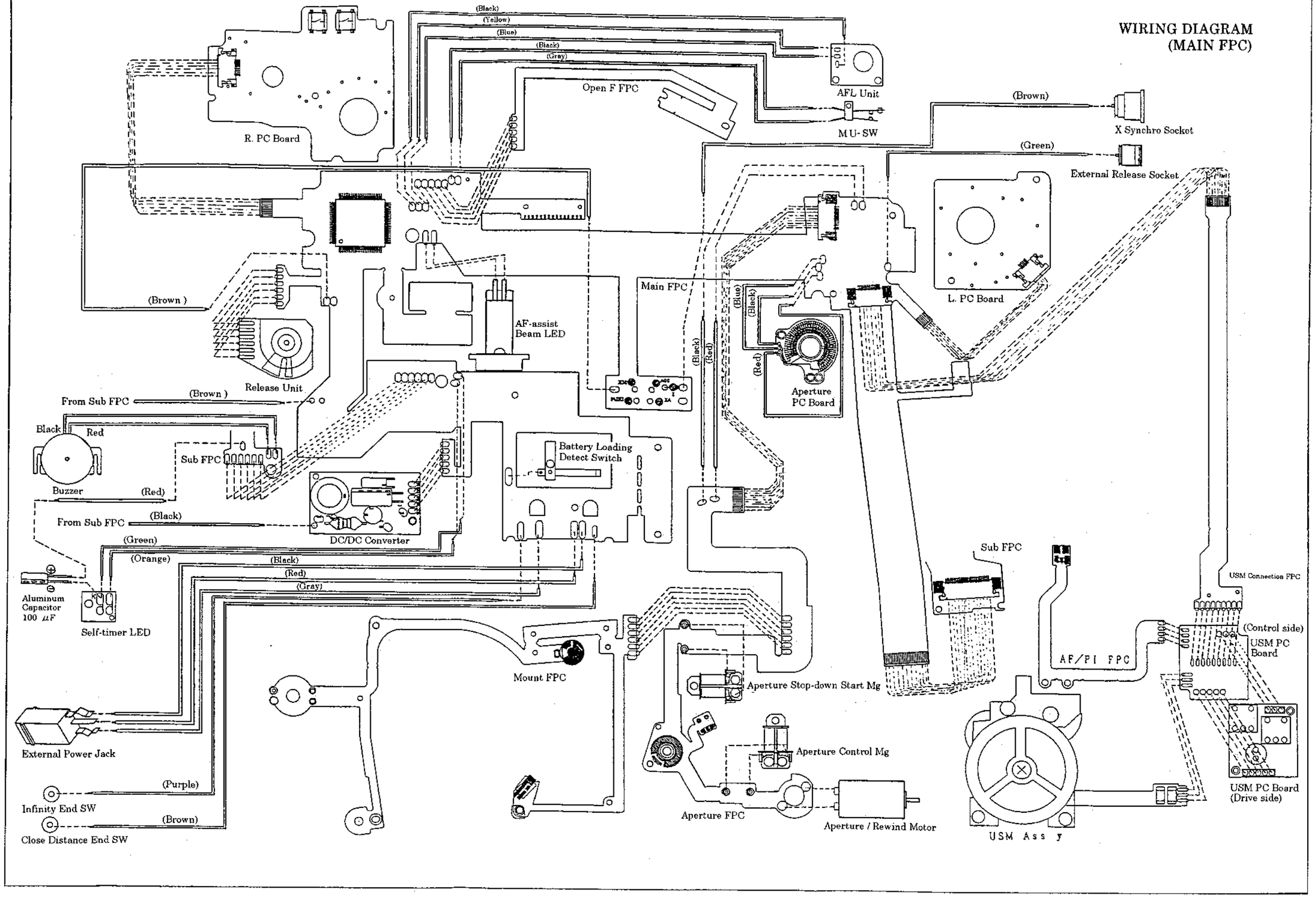
TEST POINTS ON SUB FPC

NO	Signal Name	NO	Signal Name
100	USMFDA	116	AFRES
101	USMPDA	117	ϕTR
102	SI21	118	ϕTG
103	SO21	119	FBL0
104	SCK21	120	FBL1
105	SI23	121	Cathode of D901
106	SO23C	122	AS1ST
107	SCK23C	123	BFPC
108	SIROM	124	2REQ
109	SOROM	125	1ACK
110	SCKROM	126	1Mg
111	AGC2	127	2Mg
112	AGC1	128	STAX
113	AGC0	129	PRNING
114	ϕCG	130	AFPREL
115	OM	131	SELF

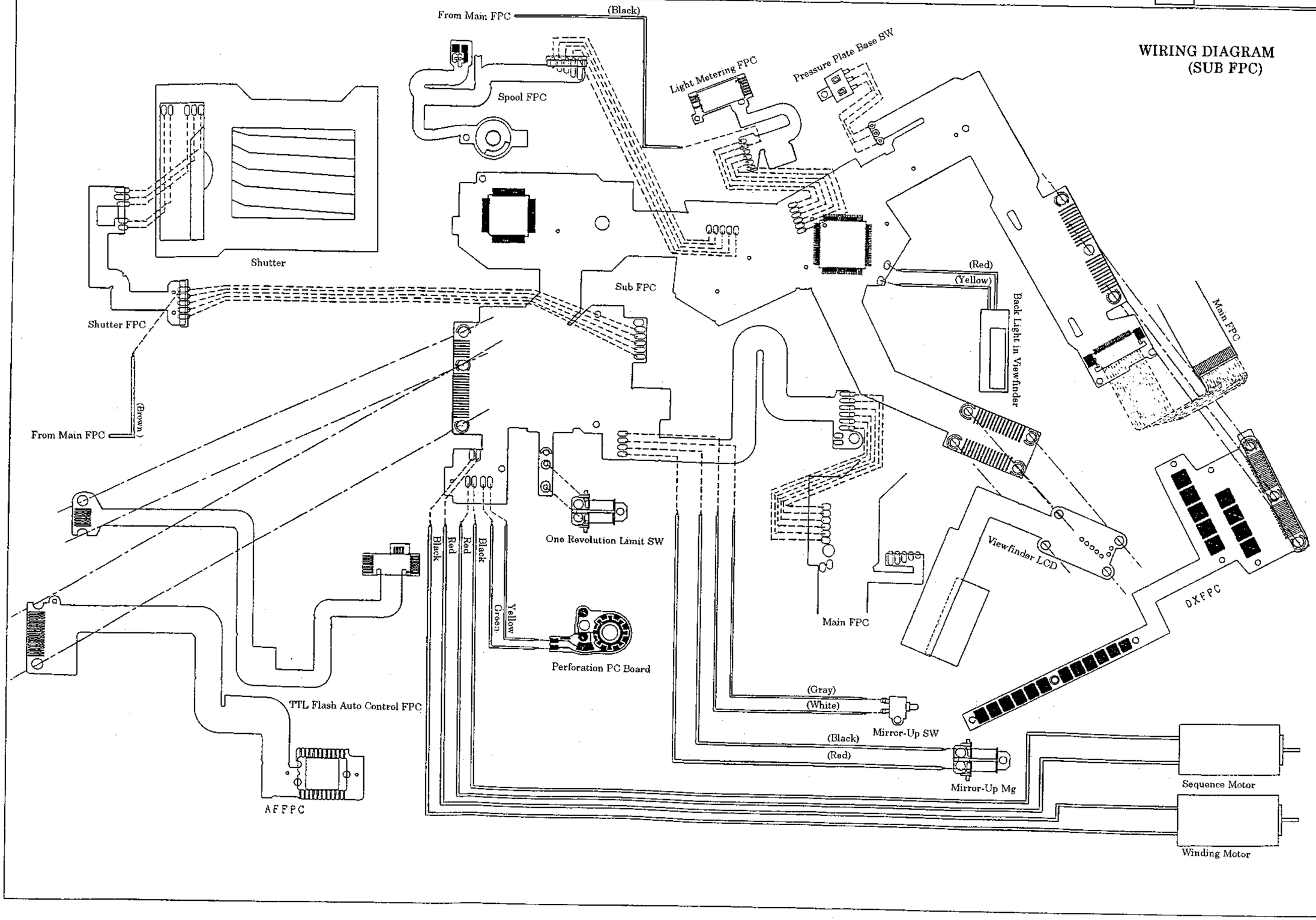
NO	Signal Name
132	EACS
133	CHC
134	ROMCS
135	USMON
136	USMDIR
137	AFCK
138	BUZZ
139	DX0
140	DX1
141	DX2
142	DX3
143	DX4
144	DX5
145	DX6
146	DX7
147	CPURES
148	1REQ
149	BFSG
150	ϕCH
151	ϕAD
152	2ACK
153	CPUCHS
154	PTRNSW
155	AFOAD
156	PBASSW
157	BFMSW
158	BF1SW
159	AEAD
160	TAD
161	AESEL0
162	AESEL1
163	APC
164	SPOLPC

NO	Signal Name
165	REWIND
166	ACHGM
167	Sequence (M5)
168	Winding (M1)
169	Winding (M2)
170	ASTPMg
171	ARLSMg
172	MUPMg
173	1RTMg
174	PRN
175	BCC
176	DCS
177	DSI
178	DSO
179	DCK
180	ASG
181	SPOLG
182	LMP
183	DHS
184	THP
185	MUPSW
186	SCHGSW
187	ACHGSW
188	PFOSW
189	1RTSW
190	BCAD
191	VB
192	VDD
193	AVREF
194	GND
195	SEG0
196	SEG1
197	SEG2
198	SEG3
199	SEG4
200	SEG5
201	SEG6
202	SEG7
203	SEG8
204	SEG9
205	SEG10
206	SEG11
207	SEG12
208	SEG13
209	SEG14
210	SEG15
211	SEG16
212	SEG17
213	SEG18
214	SEG19
215	SEG20
216	SEG21
217	SEG22
218	SEG23
219	SEG24
220	SEG25
221	SEG26
222	COM0
223	COM1
224	COM2
225	VEEP
226	VREF2
227	DWU(CPU)
228	DWU (after Resistor)
229	DRS(CPU)
230	DRS (after Resistor)
231	CH1/0

WIRING DIAGRAM (MAIN FPC)



WIRING DIAGRAM (SUB FPC)



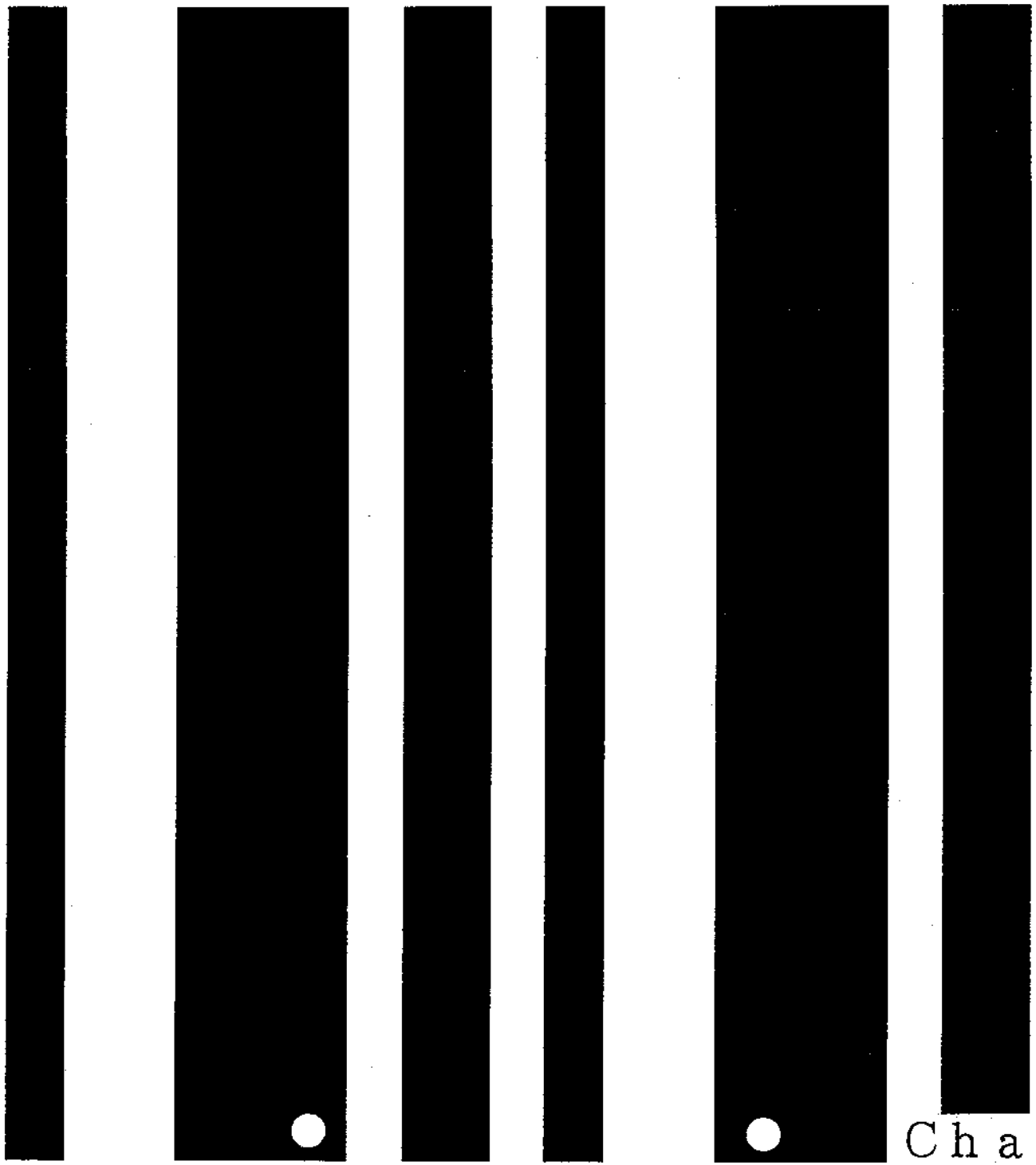
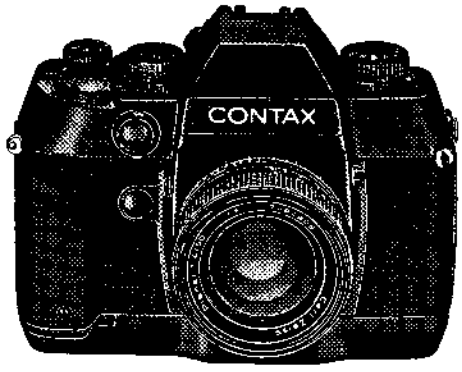


Chart for AF

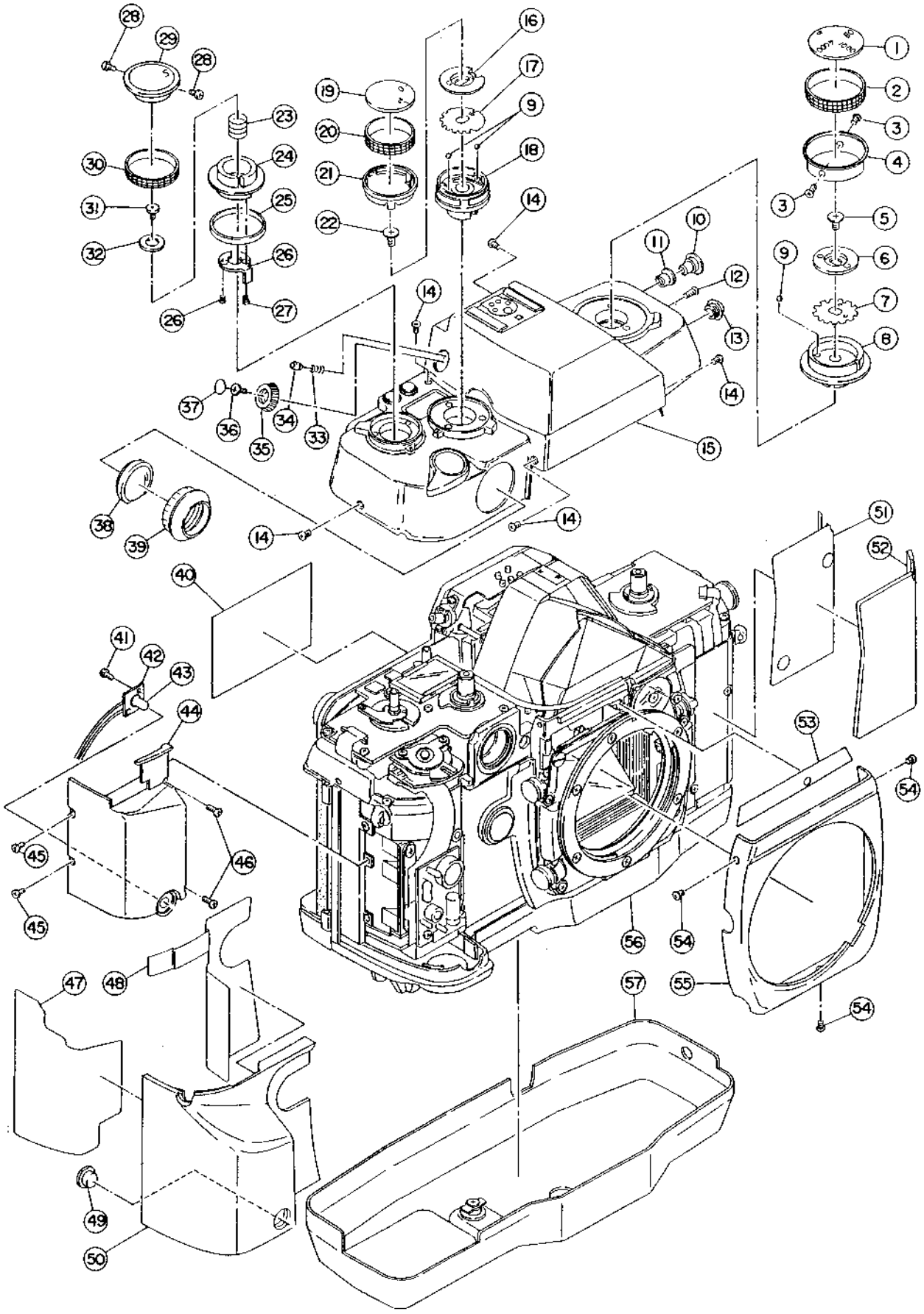
KYOCERA

CONTAX AX

ASSEMBLING CHART



KYOCERA CORPORATION
Optical Equipment Group
Service Dept. **960705**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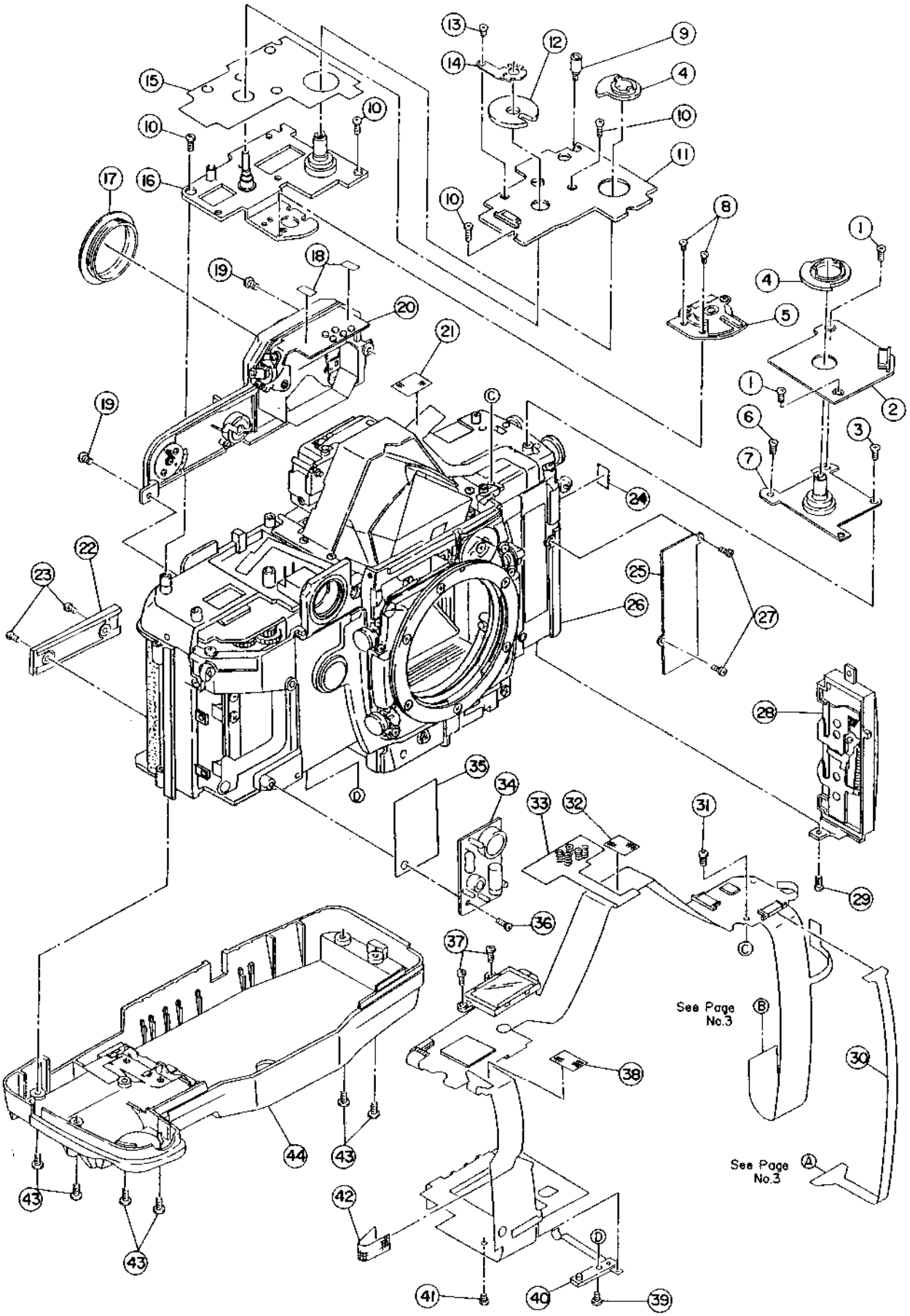
	PARTS NO.	DESCRIPTION	QTY
1	1AM22400	SPEED NAME PLATE	1
2	1AA97510	SHUTTER DIAL COVER	1
3	69102576	S. DIAL S.S	2
4	1AH26200	S. DIAL	1
5	66001063	S. CLICK RETAINING PLATE S.S	1
6	1AF22300	S. CLICK RETAINING PLATE	1
7	1AM21910	S. DIAL CLICK	1
8	1AF20410	S. DIAL HOLDER	1
9	66701520	STEEL BALL (ϕ 1.5)	3
10	13916500	RELEASE CAP (S)	1
11	13916400	R. SOCKET DECORATING RING	1
12	61815029	TOP COVER ASS'Y S.S	1
13	13913800	SYNCHRO CAP	1
14	61812529	TOP COVER ASS'Y S.S	5
15	1AFD0100	TOP COVER ASS'y (See Page No.9)	1
16	1AF22800	EXP. COMPENSATION STOP PLATE	1
17	1AH28900	EXP. COMPENSATION CLICK	1
18	1AF22900	EXP. COMPENSATION DIAL HOLDER	1
19	1AM23200	EXP. COMPENSATION NAME PLATE	1
20	14126100	ASA DIAL COVER	1
21	1AH28700	EXP. COMPENSATION NAME PLATE HOLDER	1
22	66001063	EXP. COMPENSATION STOP PLATE S.S	1
23	1AF26100	D. DIAL SPRING	1
24	1AF23700	D. DIAL HOLDER	1
25	1AF23800	D. DIAL COLLAR	1
26	*	D. DIAL OPERATION PLATE	1
27	69102566	D. DIAL OPERATION PLATE S.S	2
28	69102566	DRIVE DIAL S.S	2
29	1AF23600	DRIVE DIAL	1
30	1AF26000	D. DIAL COVER	1
31	66001004	D. DIAL SPRING RETAINER S.S	1
32	1AF25910	D. DIAL SPRING RETAINER	1
33	1AF82510	DIOPTRIC CLICK SPRING	1
34	1AF82100	DIOPTRIC CLICK PIN	1
35	1AF82300	DIOPTRIC ADJUSTMENT KNOB	1
36	66001227	DIOPTRIC ADJUSTMENT KNOB S.S	1
37	1AF83800	DIOPTRIC ADJUSTMENT KNOB PLATE	1
38	1AF63400	AF-ASSIST BEAM EMITTER LENS	1
39	1AF63100	AF-ASSIST BEAM EMITTER RING	1
40	1AF91000	PRESSURE PLATE SHEET	1
41	69113576	SELF-TIMER LED BOARD S.S	1
42	1AH53000	SELF-TIMER LED BOARD	1
43	5EDLSGL3PR8**01	SELF-TIMER LED	1
44	1AF28400	FRONT PLATE (L)	1
45	61912026	FRONT PLATE (L) S.S	2
46	61913526	FRONT PLATE (L) S.S	2
47	1AF29010	L. RUBBER TAPE (3)	1
48	1AF28810	L. RUBBER TAPE (1)	1
49	1AH15200	SELF-TIMER WINDOW	1
50	1AF28610	FRONT PLATE RUBBER (L)	1
51	1AF29110	R. RUBBER TAPE	1
52	1AF28700	FRONT PLATE RUBBER (R)	1
53	1AA74920	FRONT COVER LIGHT-PROOF CURTAIN	1
54	61812529	FRONT COVER S.S	3
55	1AF29910	FRONT COVER	1
56	*	BODY	1
57	1AFD0900	BOTTOM COVER ASS'Y (See Page No.7)	1
24～27	1AFD0800	DRIVE DIAL HOLDER ASS'Y	1

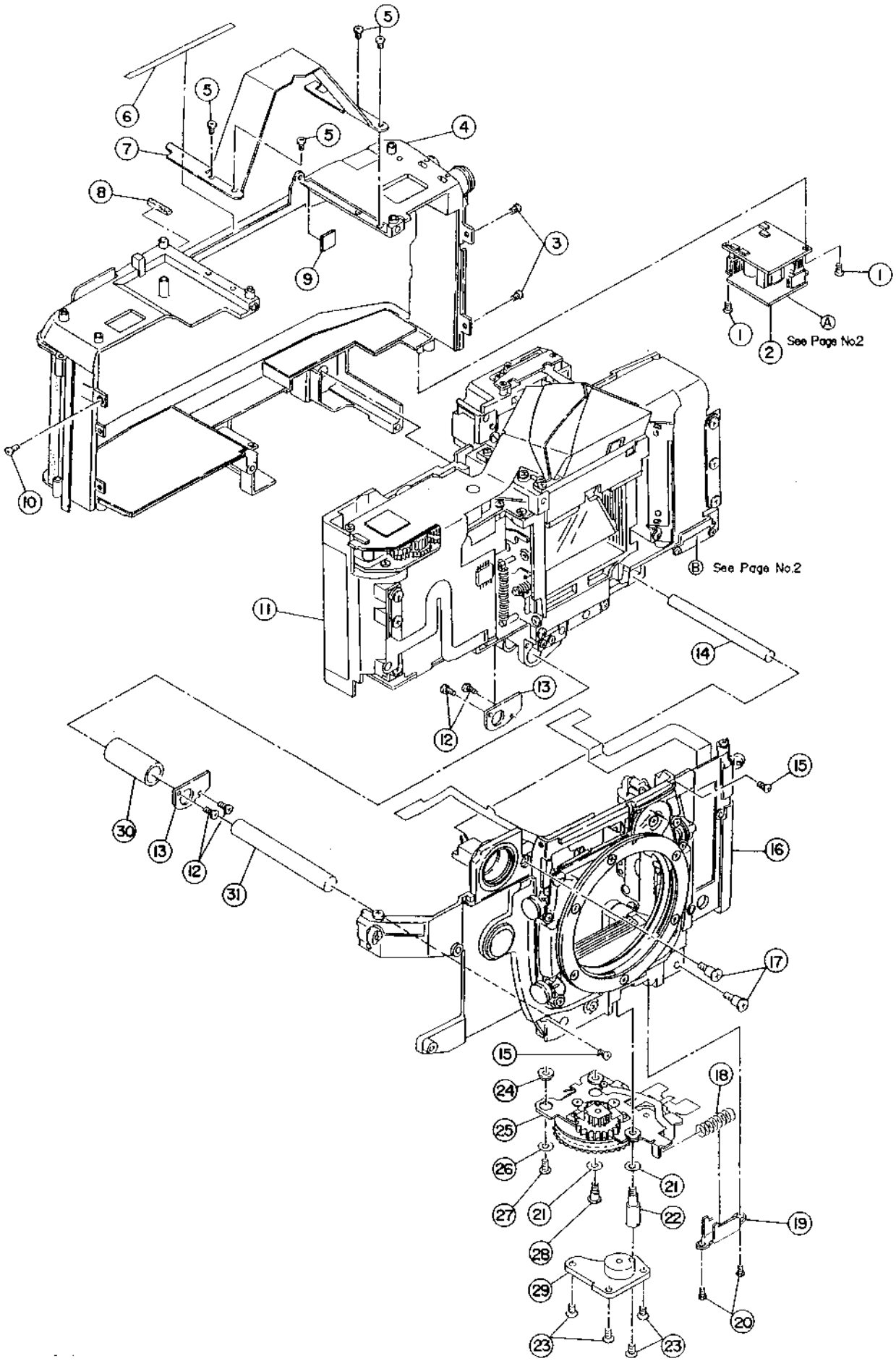
The parts names with * mark are not supplied as a repair parts.


See Page No.3
See Page No.3

	PARTS NO.	DESCRIPTION	QTY
1	63914026	R. PC BOARD ASS'Y S.S	2
2	1AFE1500	R. PC BOARD ASS'Y	1
3	61813026	S. DIAL BASE PLATE S.S	1
4	1AFC6000	EXP. COMPENSTION CONTACT BASE ASS'Y	2
5	1AF52300	RELEASE UNIT	1
6	63913026	S. DIAL BASE PLATE S.S	1
7	1AF21910	S. DIAL BASE PLATE	1
8	61911526	RELEASE UNIT S.S	2
9	1AF25200	TOP COVER POST	1
10	63914026	RELEASE BASE PLATE ASS'Y S.S	4
11	1AFE1300	L. PC BOARD ASS'Y	1
12	1AFC6100	D. CONTACT BASE ASS'Y	1
13	61813026	D. MODE LOCK PLATE S.S	1
14	1AF24100	D. MODE LOCK PLATE	1
15	1AF29210	D. PC BOARD SHEET	1
16	*	RELEASE BASE PLATE	1
17	1AA88620	EYE-PIECE RING	1
18	3CK15200	FPC STICK TAPE (2)	2
19	61923026	EYE-PIECE COVER ASS'Y S.S	2
20	1AFC7300	EYE-PIECE COVER ASS'Y	1
21	*	ACETATE CLOTH TAPE	1
22	1AF27100	TEST TERMINAL COVER	1
23	61913529	TEST TERMINAL COVER S.S	2
24	1AF45800	BACK COVER SWITCH TAPE	1
25	1AF28500	FRONT PLATE (R)	1
26	*	BODY	1
27	61911526	FRONT PLATE (R) S.S	2
28	1AFC2300	BACK COVER LOCK PLATE ASS'Y	1
29	63914026	BACK COVER LOCK PLATE ASS'Y S.S	1
30	1AF54900	USM CONNECTION FPC	1
31	61912026	MAIN FPC ASS'Y S.S	1
32	*	ACETATE CLOTH TAPE	1
33	1AFE1000	MAIN FPC ASS'Y	1
34	*	DC/DC CONVERTER	1
35	1AM12000	DC/DC CONVERTER SHEET	1
36	61912522	DC/DC CONVERTER ASS'Y S.S	1
37	63914026	EXTERNAL LCD HOLDER S.S	2
38	*	ACETATE CLOTH TAPE	1
39	63913026	BATTERY DETECTION SWITCH S.S	1
40	1AF28100	BATTERY DETECTION SWITCH	1
41	61911526	MAIN FPC ASS'Y S.S	1
42	*	ACETATE CLOTH TAPE	1
43	61924026	CELL CASE ASS'Y S.S	6
44	1AFC7200	CELL CASE ASS'Y (See Page No.9)	1

5,8,11～16	1AFC5900	RELEASE BASE PLTE ASS'Y	1
34,35	1AME1000	DC/DC CONVERTER ASS'Y	1

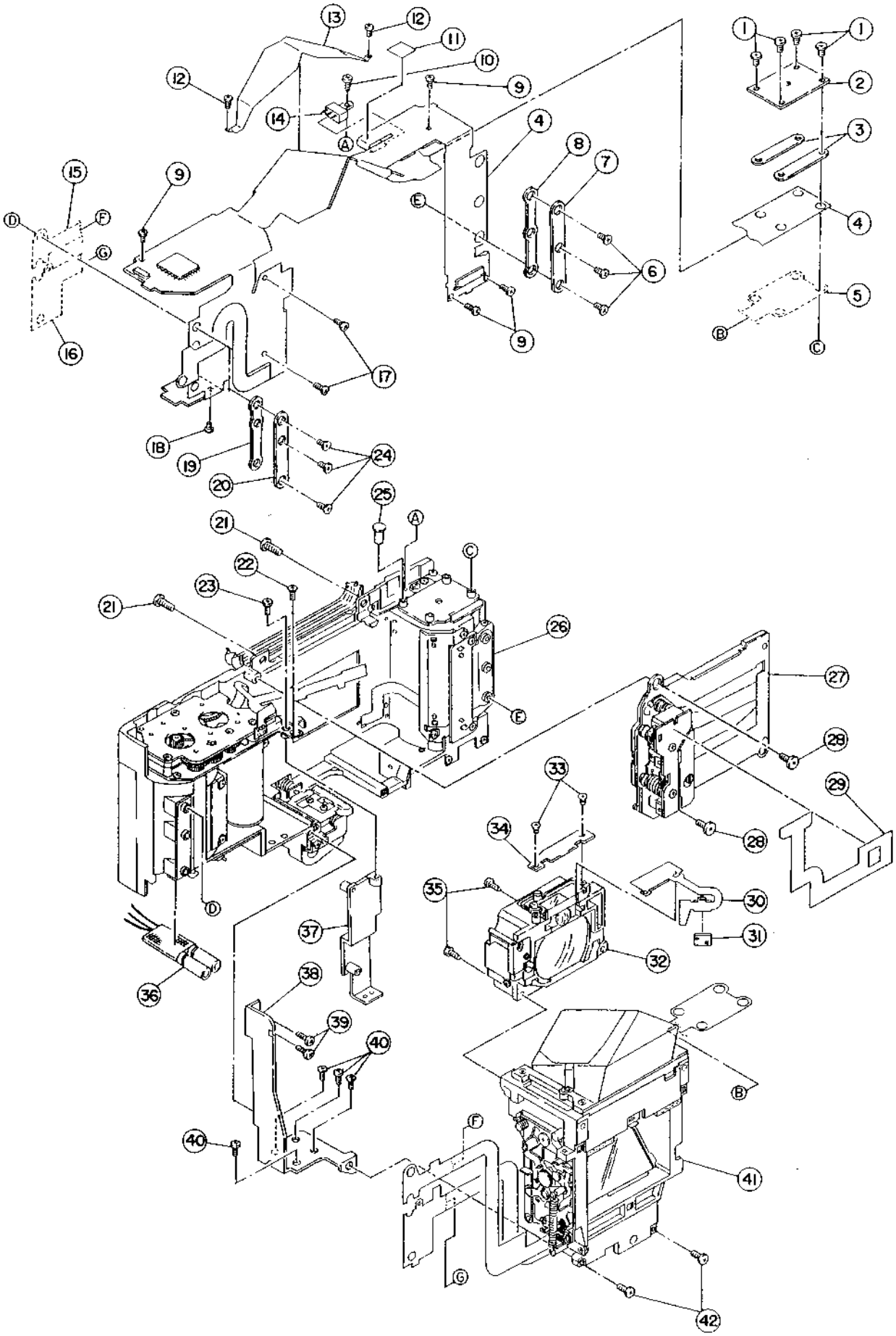
The parts names with * mark are not supplied as a repair parts.


See Page No.2
See Page No.2

	PARTS NO.	DESCRIPTION		QTY
1	61903026	USM PC BOARD ASS'Y S.S		2
2	1AFE1400	USM PC BOARD ASS'Y		1
3	61912526	MOUNT BASE ASS'Y S.S		2
4	1AFC2000	BODY FRAME ASS'Y	(See Page No.6)	1
5	61912026	PENTAPRISM ROOF (L) S.S		4
6	1AF45600	LIGHT SHIELD RUBBER TAPE (1)		1
7	1AF83530	PENTAPRISM ROOF (L)		1
8	1AF62700	MIRROR CUSHION		1
9	1AF45400	B. LIGHT SHIELD SHEET (2)		1
10	61923026	MOUNT BASE ASS'Y S.S		1
11	*	MOVABLE BODY		1
12	61914022	B. STOP PLATE S.S		4
13	1AF42200	B. STOP PLATE		2
14	1AF40600	GUIDE RAIL (2)		1
15	61924026	MOUNT BASE ASS'Y S.S		2
16	1AFC2400	MOUNT BASE ASS'Y	(See Page No.8)	1
17	66001221	MOUNT BASE ASS'Y S.S		2
18	1AF43800	AF GEAR SPRING		1
19	1AF43900	AF GEAR SPRING HOLDER		1
20	61914026	AF GEAR SPRING HOLDER S.S		2
21	60132910	WASHER		2
22	1AF43600	USM BASE PLATE SCREW (1)		1
23	63824526	TRIPOD SOCKET S.S		4
24	1AF45100	USM BASE PLATE COLLAR		1
25	1AFC5200	USM ASS'Y		1
26	60122110	WASHER		1
27	61924526	USM ASS'Y S.S		1
28	66001221	USM ASS'Y S.S		1
29	1AF10500	TRIPOD SOCKET		1
30	*	GUIDE RAIL (1) COLLAR		1
31	*	GUIDE RAIL (1)		1
30,31	1AF41300	GUIDE RAIL ASS'Y		1

The parts names with * mark are not supplied as a repair parts.

REF No.1AF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	PARTS NO.	DESCRIPTION	QTY
1	66001072	F-FPC CONNECTOR PLATE S.S	4
2	1AF79600	F-FPC CONNECTOR PLATE	1
3	1AF79700	F-FPC CONNECTOR RUBBER	2
4	*	SUB FPC	1
5	*	FINDER LCD FPC	1
6	66001072	FPC CONNECTOR PLATE (R) S.S	3
7	1AF13300	FPC CONNECTOR PLATE (R)	1
8	1AF13610	FPC CONNECTOR RUBBER (R)	1
9	61911826	SUB FPC ASS'Y S.S	4
10	63913026	BASE LOCK SWITCH S.S	1
11	1AF62900	LIGHT SHIELD SHEET	1
12	63912026	PENTAPRISM ROOF (S) S.S	2
13	1AF83420	PENTAPRISM ROOF (S)	1
14	1AF52000	BASE LOCK SWITCH	1
15	*	TTL FLASH AUTO CONTROL FPC	1
16	*	AF FPC	1
17	69213076	SUB FPC ASS'Y S.S	2
18	63913026	SUB FPC ASS'Y S.S	1
19	1AF13510	FPC CONNECTOR RUBBER (L)	1
20	1AF13200	FPC CONNECTOR PLATE (L)	1
21	69226076	MIRROR BOX ASS'Y S.S	2
22	69324076	MIRROR BOX ASS'Y S.S	1
23	69214576	BUZZER BASE PLATE S.S	1
24	66001072	FPC CONNECTOR PLATE (L) S.S	3
25	1AF12410	CARTRIDGE SWITCH PIN	1
26	*	MOVABLE BODY	1
27	1AF30500	SHUTTER UNIT	1
28	66001224	SHUTTER UNIT S.S	2
29	1AF55200	SHUTTER FPC	1
30	1AFE0500	LIGHT METERING FPC ASS'Y	1
31	*	ACETATE CLOTH TAPE	1
32	*	EYE-PIECE LENS	1
33	69313076	LIGHT METERING BASE RETAINER S.S	2
34	1AF83110	LIGHT METERING BASE RETAINER	1
35	69216076	EYE-PIECE LENS ASS'Y S.S	2
36	1AFE2000	STATIC ELECTRICITY PREVENTION BOARD ASS'Y	1
37	1AF10330	BUZZER BASE PLTAE	1
38	1AF11600	BODY REINFORCEMENT PLATE	1
39	63913026	BODY REINFORCEMENT PLATE S.S	2
40	63911826	BODY REINFORCEMENT PLATE S.S	4
41	*	MIRROR BOX (See Page No.7)	1
42	63925026	MIRROR BOX ASS'Y S.S	2

4,14	1AFE0600	SUB FPC ASS'Y	1
30～34	1AFF0300	EYE-PIECE LENS ASS'Y	1

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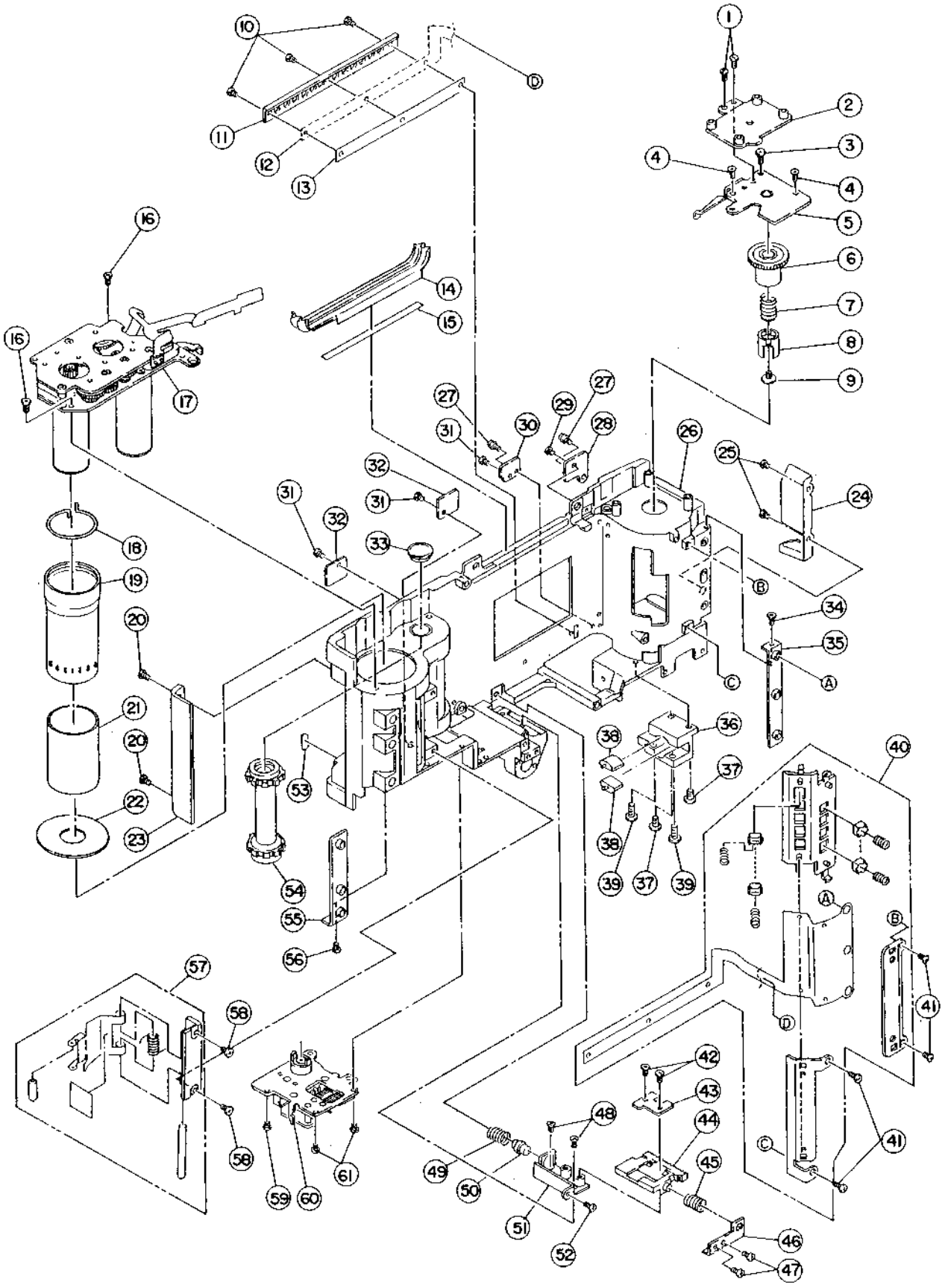
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	PARTS NO.	DESCRIPTION	QTY
1	63911626	F-FPC CONNECT BASE PLATE ASS'Y S.S	2
2	1AFC1500	F-FPC CONNECT BASE PLATE ASS'Y	1
3	63913026	RW BASE PLATE (L) ASS'Y S.S	1
4	61813026	RW BASE PLATE (L) ASS'Y S.S	2
5	*	RW BASE PLATE (L)	1
6	1AF78800	RW FORK GEAR	1
7	1AF79010	RW FORK SPRING	1
8	1AF78910	RW FORK	1
9	66001233	RW FORK S.S	1
10	66001232	CONTACT COVER S.S	3
11	1AF10810	CONTACT COVER	1
12	*	DX FPC	1
13	1AF47800	COTACT FPC SPACER	1
14	1AF10910	BODY LIGHT SHIELD RUBBER	1
15	*	DUBLE-STICK TAPE	1
16	61922526	S. CHARGE BASE PLATE ASS'Y S.S	2
17	1AFB0700	S. CHARGE BASE PLATE ASS'Y (See Page No.6)	1
18	1AF32710	SPOOL SPRING	1
19	1AF32630	SPOOL	1
20	66001167	SPOOL COVER S.S	2
21	1AF32810	SPOOL RUBBER	1
22	1AF32910	SPOOL WASHER	1
23	1AF10400	SPOOL COVER	1
24	1AF11000	CARTRIDGE LIFTER	1
25	61912022	CARTRIDGE LIFTER S.S	2
26	*	MOVABLE BODY	1
27	1AF12900	BASE GUIDE SCREW	2
28	1AF12600	BASE LOCK HOLDING PLATE (1)	1
29	61812029	BASE LOCK HOLDING PLATE S.S	1
30	1AF12710	BASE LOCK HOLDING PLATE (2)	1
31	61813029	BASE LOCK HOLDING PLATE S.S	3
32	1AF12800	BASE LOCK HOLDING PLATE (3)	2
33	1AF37610	SPROCKT HOLDER	1
34	61913026	CONNECTOR BASE (R) ASS'Y S.S	1
35	1AFB0300	CONNECTOR BASE (R) ASS'Y	1
36	1AF42400	GUIDE RAIL (2) HOLDER	1
37	61924026	GUIDE RAIL (2) HOLDER S.S	2
38	1AF42300	GUIDE RAIL (2) HOLDING BASE	2
39	61925026	GUIDE RAIL (2) HOLDER S.S	2
40	1AFB0400	DX ASS'Y	1
41	61913026	DX ASS'Y S.S	4
42	61913026	RACK GUIDE PLATE S.S	2
43	1AF42100	RACK GUIDE PLATE	1
44	1AF41500	AF DRIVE RACK	1
45	1AF41700	RACK SPRING (F)	1
46	1AF42500	RACK SPRING HOLDING PLATE	1
47	61924026	RACK SPRING HOLDING PLATE S.S	2
48	61813526	RACK BASE PLATE ASS'Y S.S	2
49	1AF41800	RACK SPRING (R)	1
50	1AF41900	RACK SPRING SHAFT	1
51	1AFB2400	RACK BASE PLATE ASS'Y	1
52	61913526	RACK BASE PLATE ASS'Y S.S	1
53	1AF10710	FILM POSITION MARK SEAL	1
54	1AF36910	SPROCKET	1
55	1AFB0200	CONNECTOR BASE (L) ASS'Y	1
56	61913026	CONNECTOR BASE (L) ASS'Y S.S	1
57	1AFB0100	FILM HOLDING PLATE ASS'Y	1
58	63913026	FILM HOLDING PLATE ASS'Y S.S	2
59	61912526	ONE REVOLUTION LIMIT ASS'Y S.S	1
60	1AFB1500	ONE REVOLUTION LIMIT ASS'Y	1
61	61912522	ONE REVOLUTION LIMIT ASS'Y S.S	2
5～9	1AFC1300	RW BASE PLATE (L) ASS'Y	1

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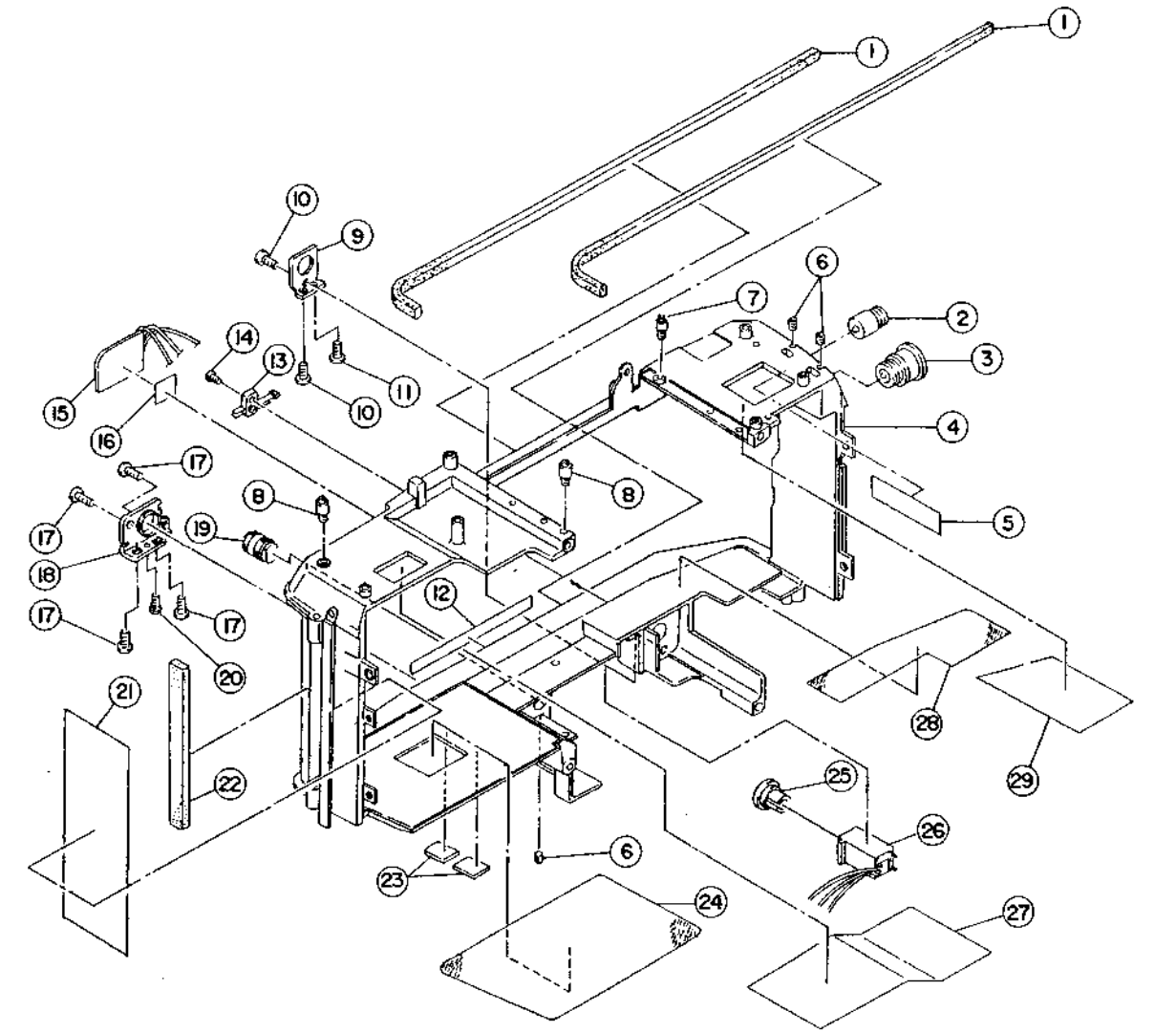
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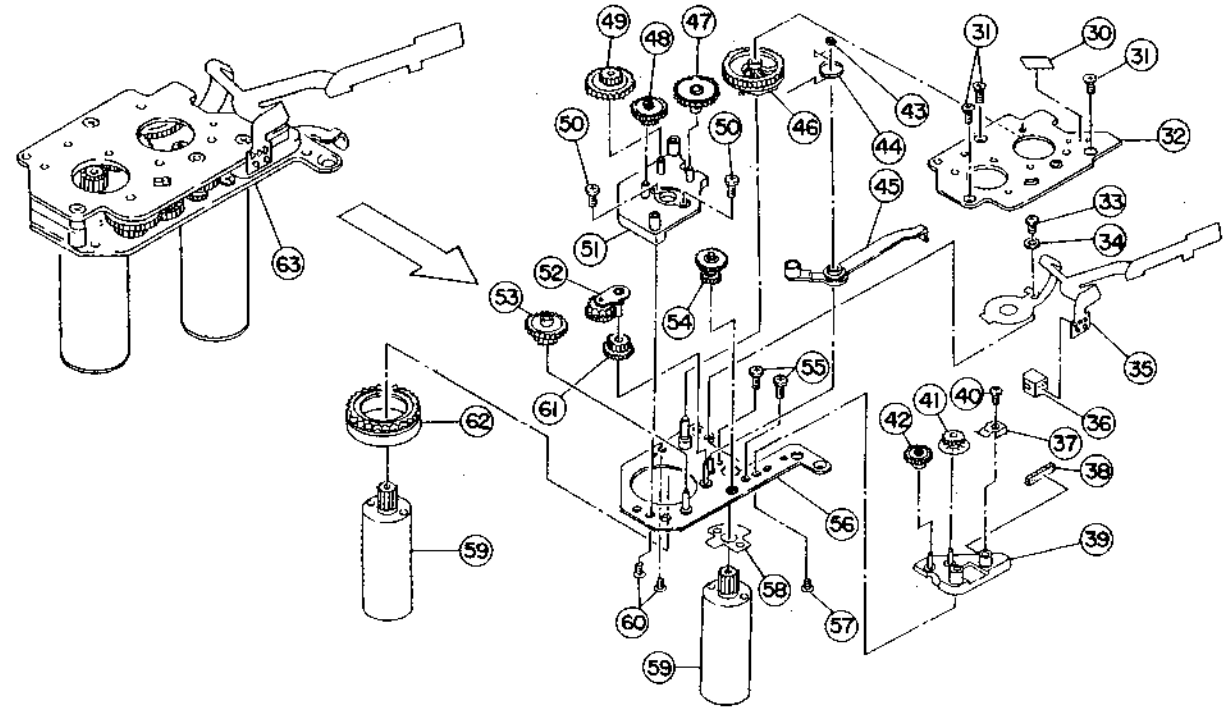
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	PARTS NO.	DESCRIPTION	QTY
1	1AF47010	BODY MOQUETTE	2
2	1AFC2200	RELEASE SOCKET ASS'Y	1
3	1AFC2100	SYNCHRO SOCKET ASS'Y	1
4	*	BODY FRAME (See Page No.3)	1
5	1AF46600	BODY LIGHT SHIELD SHEET (6)	1
6	66001136	HEXAGON SOCKET SCREW	3
7	1AF25110	S. BASE PLATE POST	1
8	1AF25400	R. BASE PLATE POST	2
9	1AFC5100	GUIDE RAIL (2) ADJUST PLATE ASS'Y	1
10	63924526	GUIDE RAIL (2) ADJUST PLATE ASS'Y S.S	2
11	61923526	GUIDE RAIL (2) ADJUST PLATE ASS'Y S.S	1
12	*	DOUBLE-STICK TAPE	1
13	1AA57120	MU SWITCH	1
14	63914026	MU SWITCH S.S	1
15	1AF52410	AF-L UNIT	1
16	*	DOUBLE-STICK TAPE	1
17	63924526	GUIDE RAIL (1) ADJUST PLATE ASS'Y S.S	4
18	1AFC5000	GUIDE RAIL (1) ADJUST PLATE ASS'Y	1
19	1AFE0800	TERMINATING SWITCH BASE ASS'Y	1
20	61923526	GUIDE RAIL (1) ADJUST PLATE ASS'Y S.S	1
21	1AF46500	BODY LIGHT SHIELD SHEET (5)	1
22	1AF46800	BODY LIGHT SHIELD MOQUETTE	1
23	1AF28010	CONTACT SHEET	2
24	1AF46300	BODY LIGHT SHIELD SHEET (3)	1
25	1AM18510	EXTERNAL POWER CAP	1
26	1AM18400	EXTERNAL POWER JECK	1
27	1AF46100	BODY LIGHT SHIELD SHEET (1)	1
28	1AF46400	BODY LIGHT SHIELD SHEET (4)	1
29	1AF46200	BODY LIGHT SHIELD SHEET (2)	1
30	*	DOUBLE-STICK TAPE	1
31	69313576	S. CHARGE UPPER BASE PLATE S.S	3
32	*	S. CHARGE UPPER BASE PLATE	1
33	66001150	SPOOL FPC S.S	1
34	60152710	WASHER	1
35	1AF55400	SPOOL FPC	1
36	5ENCRP11133**01	PHOTO-INTERRUPTER	1
37	1AF33300	SPOOL PI RETAINING PLATE	1
38	1AF33500	SPOOL BASE PLATE MOQUETTE	1
39	1AF30400	SPOOL PULSE BASE PLATE	1
40	61913026	SPOOL PI RETAINING PLATE S.S	1
41	1AF33200	WINDING ENCODER GEAR (2)	1
42	1AF33100	WINDING ENCODER GEAR (1)	1
43	66101225	E RING (E-12)	1
44	1AF35200	MS CHARGE LEVER SPRING	1
45	1AFB1000	MS CHARGE LEVER ASS'Y	1
46	1AFB1100	MS CHARGE CAM ASS'Y	1
47	1AF34000	MS CHARGE GEAR (3)	1
48	1AF33800	MS CHARGE GEAR (1)	1
49	1AF33900	MS CHARGE GEAR (2)	1
50	63913526	WINDING MOTOR S.S	2
51	1AF30200	S. CHARGE MIDDLE BASE PLATE	1
52	1AFB1200	WINDING EPICYCLIC ARM ASS'Y	1
53	1AF31500	WINDING GEAR (5)	1
54	1AFB1300	WINDING GEAR (2) ASS'Y	1
55	61912226	WINDING MOTOR S.S	2
56	*	S. CHARGE LOWER BASE PLATE	1
57	69313576	SPOOL PULSE BASE PLATE S.S	1
58	1AF33000	MOTOR SPACER	1
59	1AF30600	WINDING MOTOR	2
60	69313576	S. CHARGE MIDDLE BASE PLATE S.S	2
61	1AF31300	WINDING GEAR (3)	1
62	1AF31600	WINDING GEAR (6)	1
63	1AFB0700	S. CHARGE BASE PLATE ASS'Y	1

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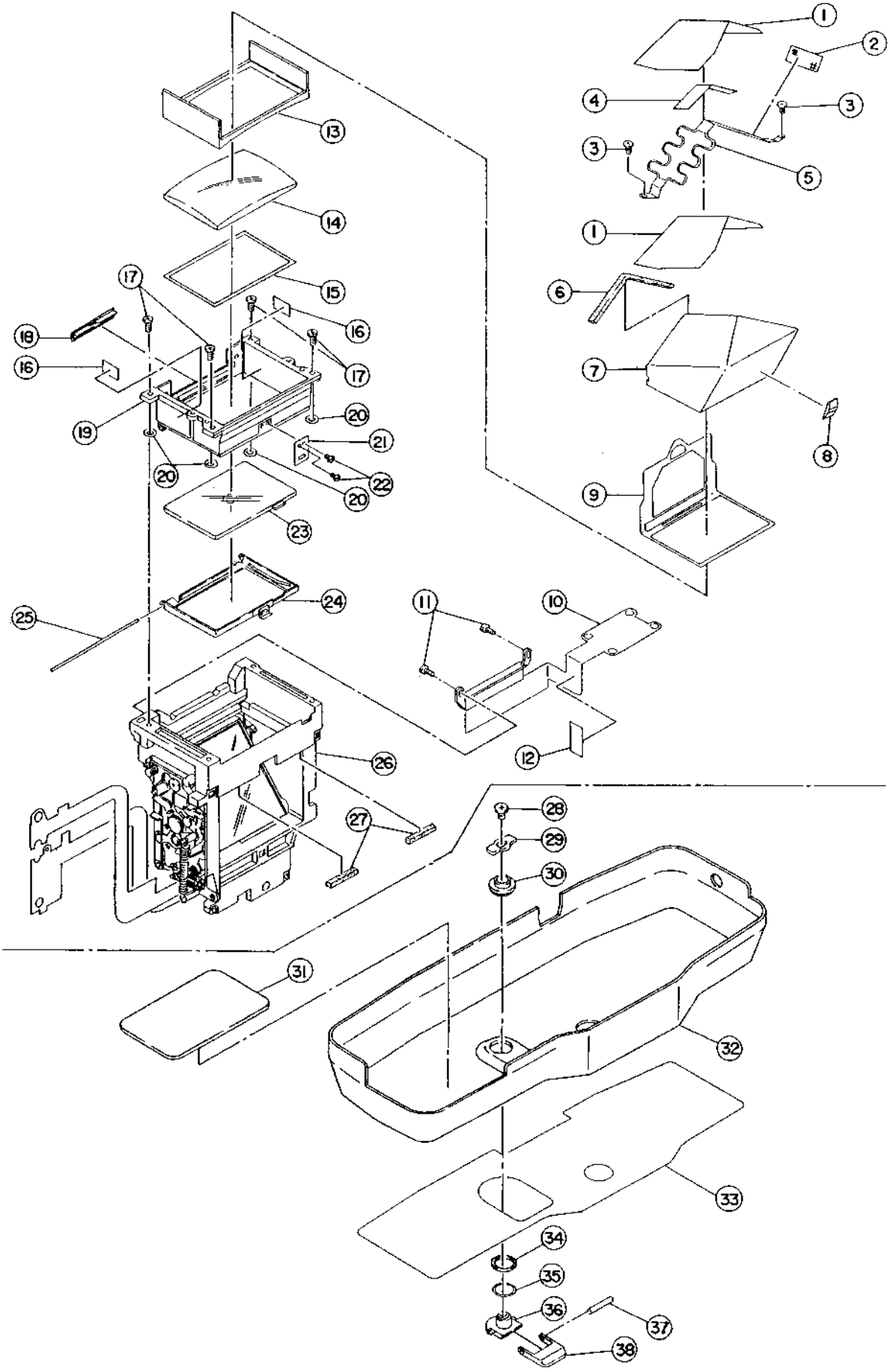
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	PARTS NO.	DESCRIPTION	QTY
1	17484210	PENTA. COVER	2
2	*	ACETATE CLOTH TAPE	1
3	63912526	PENTA PRISM RETAINING SPRING S.S	2
4	*	DOUBLE-STICK TAPE	1
5	1AF80510	PENTA PRISM RETAINING SPRING	1
6	1AA82110	PENTA PRISM DUST-PROOF MOQUETTE	1
7	1AF80100	PENTA PRISM	1
8	1AA82200	PENTA PRISM RETAINING PLATE	1
9	1AF80810	VIEWFINDER FRAME (B)	1
10	1AFF0200	FINDER LCD ASS'Y	1
11	66001046	FINDER LCD ASS'Y S.S	2
12	*	DOUBLE-STICK TAPE	1
13	1AF80320	PENTA PRISM SPACER	1
14	1AF80600	CONDENSER LENS	1
15	1AF80700	VIEWFINDER FRAME (A)	1
16	1AD79000	AF-M RUBBER	2
17	69215576	PENTA PRISM HOLDER S.S	4
18	1AF81100	FINDER INDICATION PRISM	1
19	1AF80210	PENTA PRISM HOLDER	1
20	12866700	FOCUS ADJUST WASHER (t:0.02)	4
	12866600	FOCUS ADJUST WASHER (t:0.05)	4
	60311812	FOCUS ADJUST WASHER (t:0.1)	4
	60321810	FOCUS ADJUST WASHER (t:0.2)	4
	60331817	FOCUS ADJUST WASHER (t:0.3)	4
	60341812	FOCUS ADJUST WASHER (t:0.4)	4
	60351810	FOCUS ADJUST WASHER (t:0.5)	4
	60361817	FOCUS ADJUST WASHER (t:0.6)	4
21	1AM82700	FS LOCK SPRING (S)	1
22	61902026	FS LOCK SPRING (S) S.S	2
23	1AH84900	FOCUSING SCREEN	1
24	1AMF0200	FS HOLDER ASS'Y	1
25	1AM83000	FS HINGE SHAFT	1
26	*	MIRROR BOX	1
27	1AF62700	MIRROR CUSHION	2
26,27	1AFC0100	MIRROR BOX ASS'Y	1
28	66001031	BOTTOM COVER LOCK S.S	1
29	1AF27500	BOTTOM COVER LOCK	1
30	1AF27410	BOTTOM COVER LOCK SHAFT HOLDER	1
31	1AM29000	BOTTOM COVER SHEET	1
32	*	BOTTOM COVER (See Page No.1)	1
33	1AF29310	BOTTOM COVER PROTECTOR	1
34	1AF21500	FRICTION WASHER	1
35	1AF21400	FRICTION FLAT SPRING	1
36	1AF27300	BOTTOM COVER LOCK SHAFT	1
37	66661730	SPRING PIN	1
38	1AF27200	BOTTOM COVER LOCK KNOB	1

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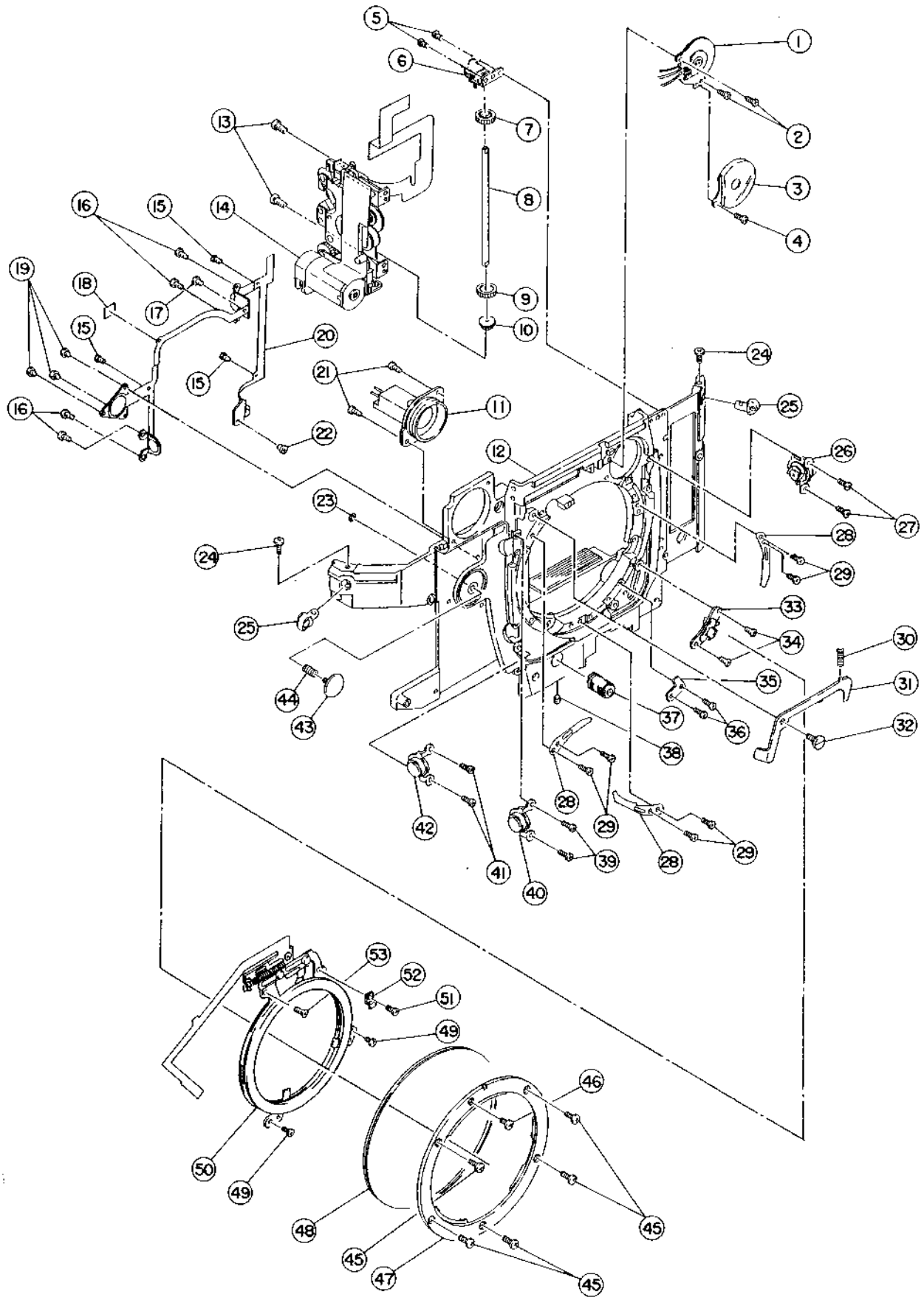
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	PARTS NO.	DESCRIPTION	QTY
1	1AAAB360	APERTURE CODE ASS'Y	1
2	61913026	APERTURE CODE ASS'Y S.S	2
3	1AA78700	APERTURE INTERLOCK COVER	1
4	61902022	APERTURE INTERLOCK COVER S.S	1
5	61912526	RW BASE PLATE (S) ASS'Y S.S	2
6	1AFC4800	RW BASE PLATE (S) ASS'Y	1
7	1AF77900	RW GEAR (3)	1
8	1AF78200	RW COUPLING SHAFT	1
9	1AF77800	RW GEAR (2)	1
10	1AF78410	RW COUPLING SHAFT HOLDER	1
11	1AFE0700	AF-ASSIST BEAM EMITTER ASS'Y	1
12	*	MOUNT BASE (See Page No.3)	1
13	61923022	F. BASE PLATE ASS'Y S.S	2
14	1AFC3300	F. BASE PLATE ASS'Y	1
15	61902026	MOUNT BASE FPC ASS'Y S.S	3
16	61913026	MOUNT BASE FPC ASS'Y S.S	4
17	66001050	MOUNT BASE FPC ASS'Y S.S	1
18	*	POLYIMIDE TAPE	1
19	61911526	MOUNT BASE FPC ASS'Y S.S	3
20	1AFC2600	MOUNT BASE FPC ASS'Y	1
21	61913026	AF-ASSIST BEAM EMITTER ASS'Y S.S	2
22	61912522	MOUNT BASE FPC ASS'Y S.S	1
23	66101225	E RING (E-12)	1
24	63926026	STRAP HOLDER S.S	2
25	1AQ16310	STRAP HOLDER	2
26	1AFC3200	METERING CHANGE LEVER ASS'Y	1
27	61913026	METERING CHANGE LEVER ASS'Y S.S	2
28	13981230	MOUNT SPRING	3
29	61913026	MOUNT SPRING S.S	6
30	1AA78510	LENS LOCK LEVER SPRING	1
31	1AF79900	LENS LOCK LEVER	1
32	1AA78600	LENS LOCK LEVER S.S	1
33	61813026	THETA BASE PLATE ASS'Y S.S	2
34	1AFC3100	THETA BASE PLATE ASS'Y	1
35	13981300	MOUNT STOPPER	1
36	61913026	MOUNT STOPPER S.S	2
37	1AFE0800	TERMINATING SWITCH BASE ASS'Y	1
38	66001136	HEXAGON SOCKET SCREW S.S	1
39	61913026	LENS LOCK BUTTON ASS'Y S.S	2
40	1AFC2500	LENS LOCK BUTTON ASS'Y	1
41	61913026	PREVIEW BUTTON ASS'Y S.S	2
42	1AFC2700	PREVIEW BUTTON ASS'Y	1
43	1AF70920	EXPOSURE CHECK BUTTON	1
44	13931300	RELEASE SPRING	1
45	61925522	BODY MOUNT S.S	5
46	66001138	BODY MOUNT S.S	1
47	1AA75000	BODY MOUNT	1
48	1AM79000	MOUNT RING	1
49	61912526	F. RING BASE PLATE ASS'Y S.S	2
50	1AFC2800	F. RING BASE PLATE ASS'Y	1
51	61912526	APERTURE INTERLOCK RING RETAINER S.S	1
52	1AM62500	APERTURE INTERLOCK RING RETAINER	1
53	61812226	F. RING BASE PLATE ASS'Y S.S	1

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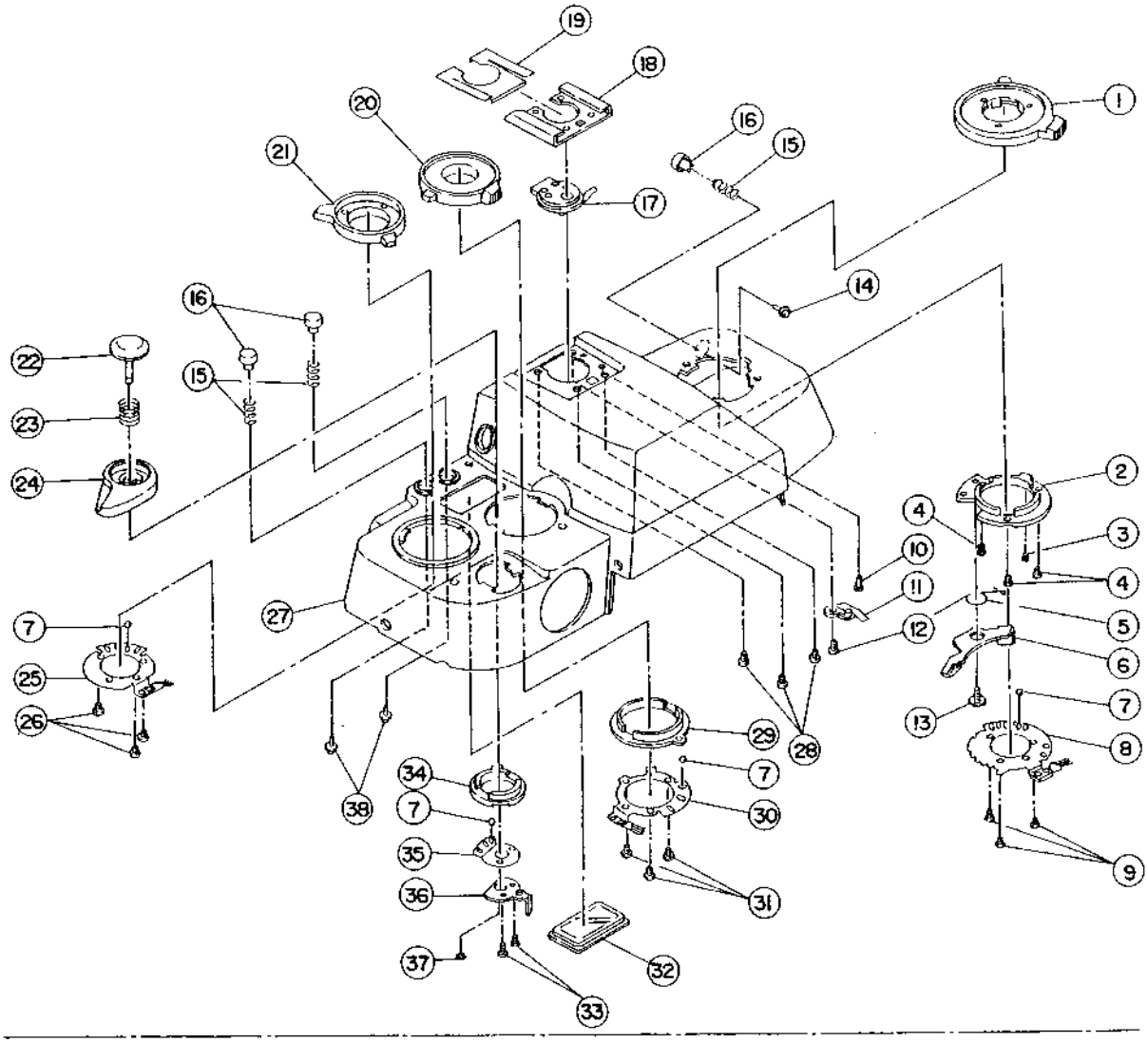
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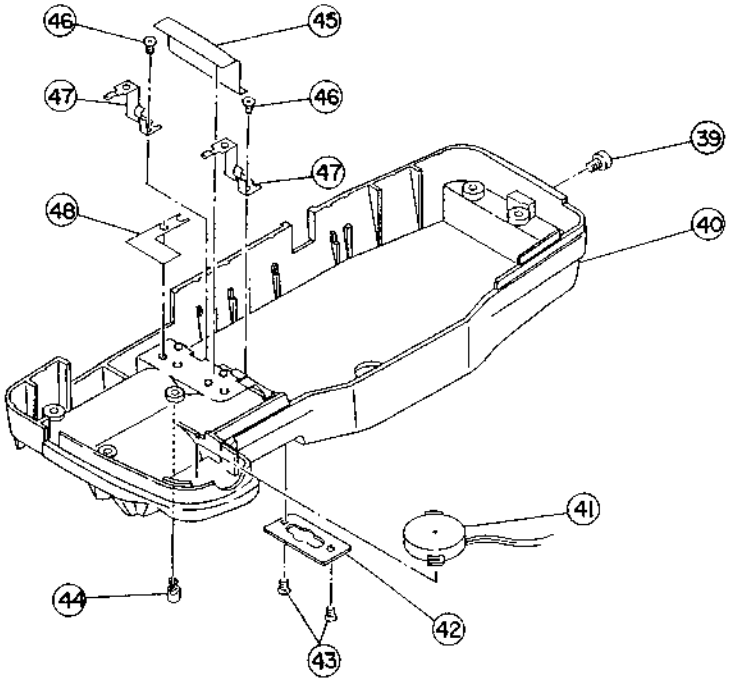
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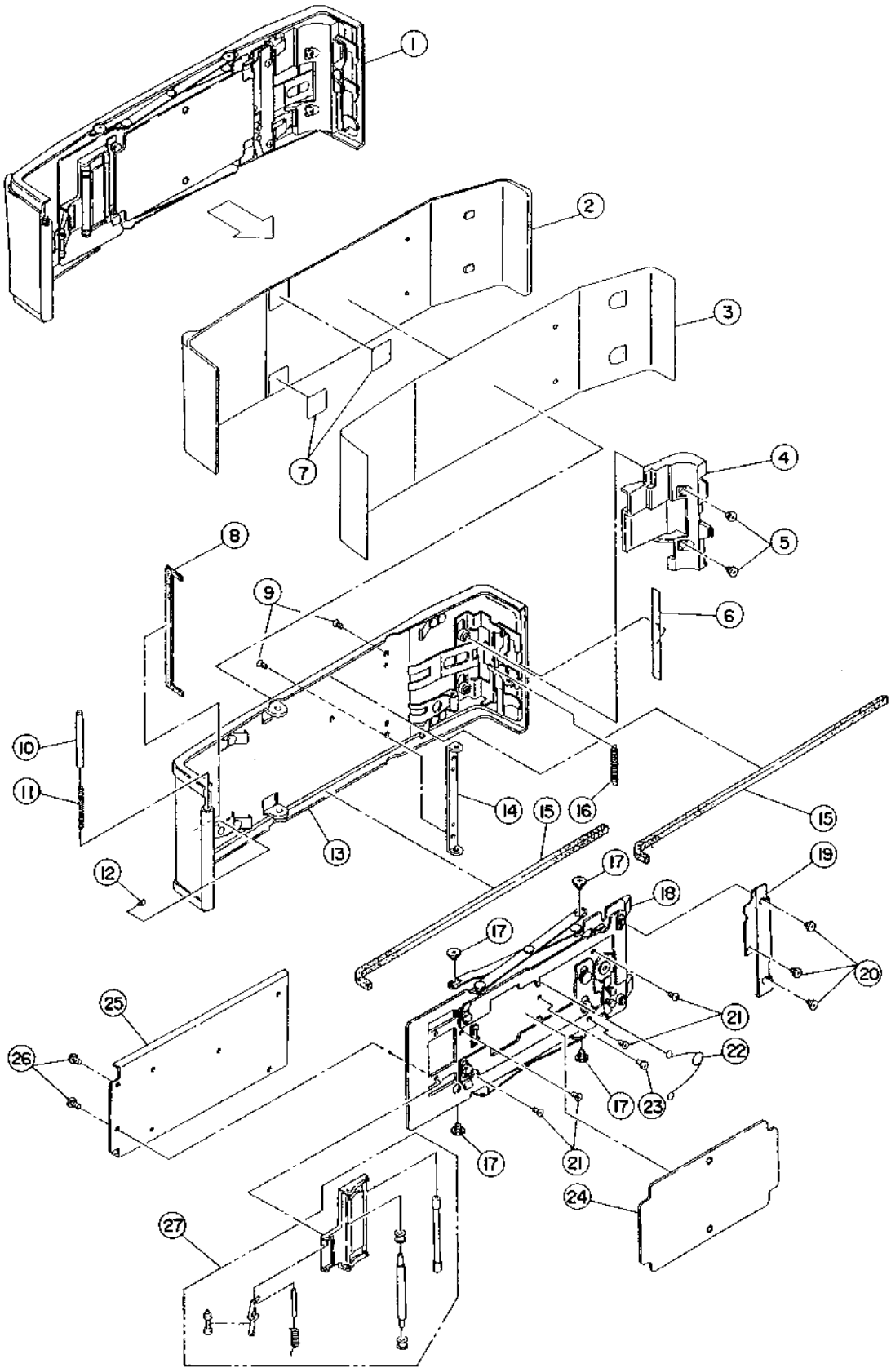
	PARTS NO.	DESCRIPTION	QTY
1	1AF20610	MODE LEVER	1
2	1AF20700	MODE LEVER HOLDER	1
3	1AF21000	MODE CLICK SPRING	1
4	61912026	MODE LEVER HOLDER S.S	1
5	1AF24800	MODE LOCK SPRING	1
6	1AF21620	MODE LOCK LEVER	1
7	66701520	STEEL BALL (ϕ 1.5)	4
8	1AFD0600	MODE CLICK ASS'Y	1
9	69103066	MODE CLICK ASS'Y S.S	3
10	1AM22300	SHOE SWITCH PIN	1
11	1AQ27400	SHOE CONTACT PLATE (1) ASS'Y	1
12	61912526	SHOE CONTACT PLATE (1) ASS'Y S.S	1
13	66001004	MODE LOCK LEVER S.S	1
14	1AF26710	M. LOCK BUTTON SHAFT	1
15	1AF26600	U/D BUTTON SPRING	3
16	1AF26500	U/D BUTTON	3
17	1AMB8400	SHOE CONTACT ASS'Y	1
18	1AM20210	ACCESSORY SHOE	1
19	1AM20320	SHOE PLATE SPRING	1
20	1AF23120	ABC LEVER	1
21	1AF24500	F. MODE LEVER	1
22	1AF25800	RELEASE BUTTON	1
23	1AA24400	MAIN SWITCH BUTTON SPRING	1
24	1AF25510	MAIN SWITCH LEVER	1
25	1AFD0400	F. MODE CLICK ASS'Y	1
26	69103066	F. MODE CLICK ASS'Y S.S	3
27	*	TOP COVER (See Page No.1)	1
28	61912022	ACCESSORY SHOE S.S	3
29	1AF23200	ABC LEVER HOLDER	1
30	1AFD0500	ABC CLICK ASS'Y	1
31	69103066	ABC CLICK ASS'Y S.S	3
32	1AF25000	C-LCD WINDOW	1
33	69103066	MAIN SWITCH OPERATION LEVER ASS'Y S.S	2
34	1AF25600	MAIN SWITCH LEVER HOLDER	1
35	1AA24600	MAIN SWITCH CLICK PLATE	1
36	1AFD0300	MAIN SWITCH OPERATION LEVER ASS'Y	1
37	66101225	E RING (E-12)	1
38	1AF26310	U/D BUTTON SHAFT	2
39	1AF27700	BOTTOM COVER GUIDE	1
40	*	CELL CASE (See Page No.2)	1
41	1AF58000	PIEZO-ELECTRIC BUZZER	1
42	1AF27800	BOTTOM COVER LOCK PLATE	1
43	69312566	BOTTOM COVER LOCK PLATE S.S	2
44	1AF28300	BATTERY DETECTION PIN	1
45	1AM28900	BATTERY CHAMBER LIGHT SHIELD TAPE	1
46	69112566	BATTERY CONTACT S.S	2
47	1AF27910	BATTERY CONTACT	2
48	1AF28210	BATTERY DETECTION SWITCH (2)	1

The parts names with * mark are not supplied as a repair parts.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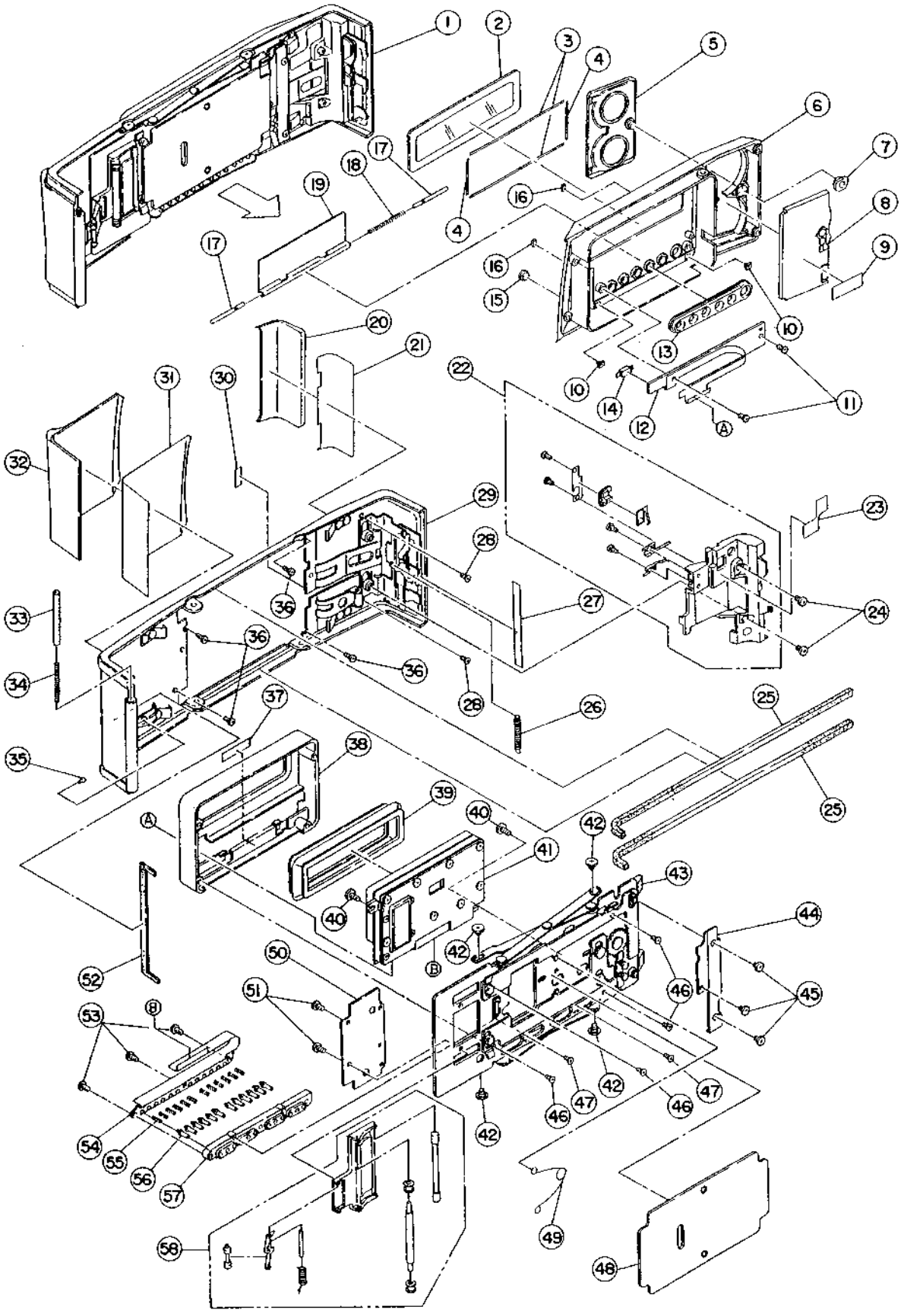
	PARTS NO.	DESCRIPTION	QTY
1	1AFD1000	BACK COVER ASS'Y	1
2	1AF15310	BACK COVER RUBBER	1
3	1AF47100	BACK COVER RUBBER TAPE	1
4	1AF15710	LOCK RELEASE PLATE COVER	1
5	63912526	LOCK RELEASE PLATE COVER S.S	2
6	1AF45200	B. ANTI-REFLECTION SHEET	1
7	1AF15400	BACK COVER RUBBER SUPPORT PLATE	2
8	1AF46900	BACK COVER LIGHT SHIELD MOQUETTE	1
9	69312566	BASE HOLDING PLATE S.S	2
10	13113000	HINGE SHAFT (1)	1
11	17417700	HINGE SHAFT SPRING	1
12	66001166	HINGE SHAFT RELEASE PIN	1
13	*	BACK COVER	1
14	1AF16700	BASE HOLDING PLATE	1
15	1AF47200	BACK COVER MOQUETTE	2
16	1AF16000	LOCK RELEASE PLATE SPRING	1
17	66001189	PRESSURE PLATE BASE ASS'Y S.S	4
18	*	PRESSURE PLATE BASE	1
19	1AF19400	BASE LOCK PLATE COVER	1
20	66001050	BASE LOCK PLATE COVER S.S	3
21	69312566	BASE REINFORCEMENT PLATE S.S	4
22	1AF17800	BASE LOCK PLATE SPRING	1
23	63912526	BASE REINFORCEMENT PLATE S.S	1
24	1AFD1700	PRESSURE PLATE ASS'Y	1
25	1AF47310	BASE REINFORCEMENT PLATE	1
26	69212566	FILM ROLLER BASE ASS'Y S.S	2
27	1AFD1600	FILM ROLLER BASE ASS'Y	1
18～27	1AFD1400	PRESSURE PLATE BASE ASS'Y	1

The parts names with * mark is not supplied as a repair parts.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	PARTS NO.	DESCRIPTION	QTY
1	*	BACK COVER (D) ASS'Y	1
2	2DA22000	BACK COVER PANEL	1
3	2DA23600	PANEL TAPE (1)	2
4	2DA23700	PANEL TAPE (2)	2
5	2DAB5000	D. BATTERY CAP ASS'Y	1
6	2DA21710	BACK COVERING	1
7	2DA23300	D. BATTERY CAP SCREW SOCKET	1
8	2DAE2000	D. BATTERY CONTACT ASS'Y	1
9	*	DOUBLE-STICK TAPE	1
10	2DA21800	BACK COVER CAP	2
11	69113076	MODE BUTTON FPC S.S	2
12	2DA24100	MODE BUTTON FPC	1
13	2DA22110	MODE BUTTON	1
14	2DA24300	M. INDICATION LED	1
15	2DA22610	M. INDICATION WINDOW	1
16	2DA22500	MODE BUTTON COVER MG	2
17	2DA22300	MODE BUTTON COVER SHAFT	2
18	2DA22400	MODE BUTTON COVER SPRING	1
19	2DA22200	MODE BUTTON COVER	1
20	2DA20310	BACK COVER RUBBER (L)	1
21	2DA23500	BACK COVER RUBBER (L) TAPE	1
22	2DAB1000	LOCK RELEASE PLATE COVER ASS'Y	1
23	2DA21000	M-SW NAME PLATE	1
24	63912526	LOCK RELEASE PLATE COVER ASS'Y S.S	2
25	1AF47200	BACK COVER MOQUETTE	2
26	1AF16000	LOCK RELEASE PLATE SPRING	1
27	1AF45200	B. ANTI-REFLECTION SHEET	1
28	69313066	BACK COVERING S.S	2
29	*	BACK COVER (D)	1
30	*	DOUBLE-STICK TAPE	1
31	2DA23400	BACK COVER RUBBER (R) TAPE	1
32	2DA20200	BACK COVER RUBBER (R)	1
33	13113000	HINGE SHAFT (1)	1
34	17417700	HINGE SHAFT SPRING	1
35	66001166	HINGE SHAFT RELEASE PIN	1
36	69113076	BACK COVERING S.S	4
37	*	DOUBLE-STICK TAPE	1
38	2DA21410	MODULE COVER	1
39	2DA21900	LIGHT SHIELD RUBBER	1
40	66001039	MULTI MODULE UNIT S.S	2
41	2DA24000	MULTI MODULE UNIT	1
42	66001189	PRESSURE PLATE BASE ASS'Y S.S	4
43	*	PRESSURE PLATE BASE	1
44	1AF19400	BASE LOCK PLATE COVER	1
45	66001050	BASE LOCK PLATE COVER S.S	3
46	69313066	MODULE COVER S.S	4
47	69313066	DATE CONTACT HOLDER S.S	2
48	2DAB3000	PRESSURE PLATE (D) ASS'Y	1
49	1AF17800	BASE LOCK PLATE SPRING	1
50	2DA24500	BASE REINFORCEMENT PLATE	1
51	69212566	FILM ROLLER BASE ASS'Y S.S	2
52	1AF46900	BACK COVER LIGHT SHIELD MOQUETTE	1
53	69213576	BODY CONNECT FPC S.S	3
54	2DA24200	BODY CONNECT FPC	1
55	1AH15900	CONTACT SPRING	12
56	2DA21610	BACK COVER CONNECTOR PIN	12
57	2DA21500	DATE CONTACT HOLDER	1
58	1AFD1600	FILM ROLLER BASE ASS'Y	1
37～41,43～47,49～51,53～58,	2DAB2000	PRESSURE PLATE BASE ASS'Y	1

The parts names with * mark are not supplied as a repair parts.